THE JOURNAL

OF THE

Michigan State Medical Society

ISSUED MONTHLY UNDER THE DIRECTION OF THE COUNCIL

VOL. XXXIII JULY, 1934 No. 7

DEPARTMENT OF SOCIETY ACTIVITY

ARTICLE 2—PURPOSE

Section 1. The purposes of this Society are to promote the science and art of medicine, the protection of public health and the betterment of the Medical Profession; and to unite with similar organizations in other States and Territories of the United States to form the American Medical Association.

THIS DEPARTMENT

Under instructions of the Publication Committee this department is advanced to the first part of the JOURNAL, the purpose being to bring into greater prominence the activities of the Society and to draw to the members' attention that which their Society is accomplishing in their behalf. In doing so it is hoped that greater interest will be aroused and coöperative support increased.

There is much discussion in medical circles. Numerous proposals are being advanced. It is purposed to print some of the comments published in other State Journals in order to impart the positions that are being assumed. It is hoped that members will be kept abreast of the economic problems that are being presented through these comments and editorial expressions.

A. M. A. ACTION ON MEDICO-ECONOMICS

Two executive sessions of the A. M. A. House of Delegates in Cleveland were devoted to a general discussion of medical services. At the close of the first session the Speaker was directed to appoint a special committee to formulate the Association's policies. At the second session the committee, composed of N. B. Van Etten of New York, J. N. Henry of Philadelphia, G. A. Blumer of Connecticut, F. S. Crockett of Indiana, C. A. Dukes of California, E. H. Cary of Texas and McLain Rogers of Oklahoma, brought in the following report, which was adopted:

REPORT OF SPECIAL REFERENCE COMMITTEE OF AMERICAN MEDICAL ASSOCIATION HOUSE OF DELEGATES ON MEDICO-ECONOMICS

To the House of Delegates:

1. The following resolution was submitted by delegates of the Michigan State Medical Society:

WHEREAS, there is substantial evidence that powerful forces and agencies are working toward the development of health insurance in the United States; and

WHEREAS, During the course of its studies of medical economic problems, the Michigan State Medical Society, after a conference with officials of the American Medical Association, found it necessary to send a commission to England to inquire into the subject of health insurance; and

WHEREAS, The commission presented the following report which has been printed in full in the Journal of the Michigan State Medical Society and placed in printed form in the hands of all of the delegates of this House.

WHEREAS, The report of the commission raises certain grave questions concerning the policy of the officials of the American Medical Association toward health insurance and the effects of this policy on the practicing membership of the American Medical Association; and

WHEREAS, The report of the commission was transmitted to the Board of Trustees of the American Medical Association through the chairman in February, 1934; and

WHEREAS, The Michigan State Medical Society has received no word nor has it any other evidence that the Board of Trustees of the American Medical Association has considered or acted on the report transmitted in February, 1934; therefore be it

RESOLVED, That in order to avert a repetition in the United States of the disastrous consequences that attended the adoption of health insurance in England, the Speaker of the House of Delegates of the American Medical Association

appoint a committee to investigate and consider the policy of the Association toward health insurance and present a report to the House of Delegates.

2. Your reference committee has reviewed with painstaking interest the report of the procedures of the commission of the Michigan State Medical Society —commends the efforts of the commission to study and digest an important social operation concerned with medical service in England—applauds the sanity of its conclusions and its recorded opposition to the introduction into the United States of any system of health insurance now existing in Europe—because no system conforms at present with all of the policies adopted by the Michigan House of Delegates in July, 1933—namely

"1. Free choice of physician by the insured.
2. Limitation of benefits to those of medical service.
3. The control of medical service benefits by the profession.
4. The exclusion of individuals or organizations that might engage in health insurance for profit."

3. Your committee believe that their principles are basically sound and that they should be included within any further study of medical service to be adopted as the policy of organized medicine.

4. Your committee regrets the criticisms of policy and sincerity of officials of the American Medical Association and the publicity given to them, and finds that it was due to a misunderstanding regarding information which failed to reach the delegates from Michigan. This relates to the efforts of the Board of Trustees, the Bureau of Economics, the secretary and the editor to continuously study all forms of social experiment affecting the practice of medicine.

5. Your committee believes in the sincerity of the officials of the American Medical Association in promoting free access of any member of the association to all of the files and completed records in which he may be interested.

6. The Chairman of the Board of Trustees presented the following statement at an earlier session of the House:

Since 1912, when the British Government, through the action initiated by Lloyd George, established a system of compulsory health insurance, this problem has been prominently before the House of Delegates and other official bodies of the American Medical Association. As early as 1916, the House of Delegates requested the Board of Trustees to undertake an investigation of social insurance in all its forms and to make suitable report to the House The subject has been raised from time to time since that date. On every occasion on which the House of Delegates has officially considered the questions of compulsory health insurance and social insurance, as well as the entrance of the state into medical practice, it has reaffirmed the independence of medicine as a profession and it has always condemned any system whereby the state would in any way enter into the practice of medicine. In 1920, following the report of the committee appointed to study compulsory health insurance, the House of Delegates adopted a resolution strongly condemning all forms of compulsory health insurance.† It is a well known fact that voluntary insurance has always been the forerunner of compulsory insurance, and even the most ardent advocates of voluntary insurance admit that fact. The action of that House of Delegates has not been rescinded by any subsequent action taken by the House of Delegates.

As far as state medicine is concerned, the House of Delegates in 1921 adopted a resolution approving and endorsing all activities and policies of the states directed to the prevention of disease, but opposing the state treatment of disease except for the delinquent and the defective.‡ Again in 1922, the Association declared its opposition to all forms of state medicine because of the ultimate harm that would come thereby to the public weal through such form of medical practice.

The Judicial Council of the Association has repeatedly brought reports to this House of Delegates sustaining the same point of view, and all these reports of the Judicial Council have been accepted and approved by the House of Delegates.

Finally, last year the House of Delegates unanimously approved in principle the Minority Report of the Committee on the Costs of Medical Care, and urged that the Board of Trustees of the American Medical Association in coöperation with its constituent bodies conduct an intensive campaign to disseminate this point of view among the medical profession and the public, with a view to the maintenance of high ethical standards and the preservation of professional ideals.

Your Board of Trustees, your executives and all of the publications of this Association have done their utmost thus far to carry out the policies which you have established. Today we are confronted with an extraordinary situation of the utmost importance to the health and welfare of the American people and to the American Medical profession. It is no secret that a considerable number of foreign nations have already established state systems of medical care and that an intensive campaign has been carried on in this country for many years, led by philanthropists, social workers, economists and various foundations, to cause the American Medical profession and the American people to accept a similar type of medical practice. In accordance with the mandate of this House of Delegates, all of the facilities of the American Medical Association have been used to oppose this trend and the propaganda in support of it, which has been widely circulated and for which vast sums of money have been, and are being, expended by various interested parties. It is also now well-known that the President of the United States, in a recent message, has come forth for the principle of social insurance, with special reference to old age pensions and unemployment insurance.

In 1930, the House of Delegates recommended to the Board of Trustees the establishment of a bureau of Medical Economics in the headquarters office for the study of all of these problems as they affect the medical profession. From time to time this Bureau has issued bulletins of the greatest importance, not only for the factual data which they present, but also for the interpretation of medical economic trends. In accordance with a special request by the Board of Trustees, your Bureau of Medical Economics has prepared an extended statement of the conditions in relationship to state medicine and compulsory insurance, as they exist in other nations. This statement was made available to all Fellows of the American Medical Association by publication in the Bulletin of the Association for April, 1934. In connection with the publication of this data and this critical analysis, the Bureau of Medical Economics has also drawn up a statement entitled "Sickness Insurance Problems in the United States" which includes a presentation of twelve basic principles which should be given most careful study in relationship to any recommendations that this House may care to make on this problem for the future. This statement will now be distributed to the House of Delegates.

There are manifestations of unrest in relationship to the economic situation among some of the component and constituent bodies of this Association. On several occasions communications have been made to the Board of Trustees and to the headquarters office, urging a change in the activities of the organization which would in effect demand a departure from the policies set down by this House of Delegates during the past eighteen years. The problem is before you. The opportunity is offered here this afternoon for an extensive discussion of the situation as it confronts the medical profession today. The Board of Trustees hopes that you will give it earnest and careful consideration. Only the House of Delegates has the power to define the policies which are to guide this association in the coming years.

7. Your committee believes that this statement of the chairman of the Board of Trustees briefly reviewing the history of the action of the House of Delegates during the past eighteen years sufficiently illuminates the sincere and deep concern of the American Medical Association regarding all social programs affecting the delivery of medical service.

8. The delegates have in their hands a pamphlet entitled "Sickness Insurance Problems in the United States" as presented by the Board of Trustees.

9. Your committee does not recommend any plan but has abstracted from the pamphlet the *following principles and suggests that they be followed by all constituent bodies of the American Medical Association as bases for the conduct of any social experiments which may be contemplated by them.**

†Index and Digest, Official Actions of American Medical Association, p. 53.

‡Index and Digest, Official Actions of American Medical Association, p. 175.

*Italics ours.

10. First: All features of medical service in any method of medical practice should be under the control of the medical profession. No other body or individual is legally or educationally equipped to exercise such control.

Second: No third party must be permitted to come between the patient and his physician in any medical relation. All responsibility for the character of medical service must be borne by the profession.

Third: Patients must have absolute freedom to choose a duly qualified doctor of medicine who will service them from among all those qualified to practice and who are willing to give service.

Fourth: The method of giving the service must retain a permanent, confidential relation between the patient and a "family physician." This relation must be the fundamental and dominating feature of any system.

Fifth: All medical phases of all institutions involved in the medical service should be under professional control, being understood that hospital service and medical service should be considered separately. These institutions are but expansions of the equipment of the physician. He is the only one whom the laws of all nations recognize as competent to use them in the delivery of service. The medical profession alone can determine the adequacy and character of such institutions. Their value depends on their operation according to medical standards.

Sixth: However, the cost of medical service may be distributed, the immediate cost should be borne by the patient if able to pay at the time the service is rendered.

Seventh: Medical service must have no connection with any cash benefits.

Eighth: Any form of medical service should include within its scope all qualified physicians of the locality covered by its operation who wish to give service under the conditions established.

Ninth: Systems for the relief of low income classes should be limited strictly to those below the "comfort level" standard of incomes.

Tenth: There should be no restrictions on treatment or prescribing not formulated and enforced by the organized medical profession.

11. If it is determined in a community that some experiment to change or improve the method of administering medical service is desirable, observance of these principles will remove many of the "disturbing influences" from such an experiment. In all such experiments, attention must be sharply focused on the quality of medical service.

12. Such restrictions will undoubtedly lower the enthusiasm of many of the present advocates of such schemes. They remove the interest of the politician, the commercial promoter and all those who consciously or unconsciously are seeking to achieve other objectives than better medical care for those unable to provide such care for themselves under present conditions. All these principles are directed toward protecting the character of the service to be given and all are directly designed to guard against abuses which experience shows are bound to arise when these principles are neglected. In most communities it will be found that comparatively few changes in methods of administering medical care will be necessary. That type of medical practice which preserves the personal relationships between physician and patient, that maintains the practice of medicine as a profession, and that has withstood the test of centuries must be preserved for the best interests of both the public and the medical profession.

MUTUAL HEALTH SERVICES

In the June JOURNAL there were published the comments of three members from Oakland County. Members were requested to send in their comments and opinions for the guidance of the Committee on Economics. These are being published for the information of members.

The following comments have been received. Members are again requested to send in their comments for publication in the August issue.

FROM EX-PRESIDENT J. B. JACKSON

I have your letter of May 23d, asking for any comments which I might wish to make on the proposed plan for Mutual Health Services. As you already know, I am in favor of making an attempt to put in operation some plan of this sort. I think that the present economic situation makes it obligatory on the medical profession to devise some plan, which may make available to the public who needs it, the services which the profession is in a position to render. I am decidedly in favor of this effort being made by the medical profession primarily rather than to have it forced upon us by those who do not understand the situation as we do.

So far as any comment on the plan proposed in the May JOURNAL is concerned, I am rather reticent about making any criticism; for the committee who has given so much time and thought to the subject are in a much better position to suggest plans than I am. There are two things, however, which occur to me. One is the difficulty in selling this plan to wage earners with limited income. I think it is going to be extremely difficult making such people voluntarily assume so large an obligation for health insurance.

I should also like to add that I think it is of the greatest importance to sell this plan to the medical profession. In my contact with the profession, I am convinced that the great majority of the profession are disposed to be timid about any new plan of medical economics and are inclined to continue to carry on medical practice as it always has been done in the past.

Yours very sincerely,
JOHN B. JACKSON.

FROM BAY COUNTY

The Bay County Medical Society met and discussed "Mutual Health Service," Wednesday evening, May 9. Many interesting discussions and questions arose. As a result the members were urged to more carefully review the supplement concerning the subject and were requested to file with the secretary of this society any questions they chose to have answered. A special greeting of the society will be called later to discuss the subject further and at that time the society's stand will be taken.

Fraternally yours,
L. FERNALD FOSTER, *Secretary.*

FROM W. C. ELLET, M.D.

Before stating our position, please bear in mind that these are our ideas, and while they have been explained, and been accepted by the Berrien County Medical Society, on the other hand we admit that we have not attempted to make out a good case for Mutual Health Insurance, their information being

that of common knowledge and the report of the special meeting in Flint, copies of which they received. In other words we have followed out the same plan as the State Committee, expressing only those points favorable to our preconceived ideas, and not presenting both sides of the story or all the probable things that might happen. We might add that nearly four years ago we heard this present plan presented by one of the committee, before even the National Committee on the Cost of Medical Care presented their report, and before any state or English statistics were gathered. We admit that statistics help a lot in arriving at conclusions, but we feel that if the State Committee had honestly gone out for impartial statistics as a solution to a problem, just as many figures would be presented in opposition to their plan.

We appreciate the Luce-Sinai report of their English trip, but we cannot understand why there were not at least a few more minor objections to the Insurance problem, as it is almost impossible for us in this day and age to conceive of any idea, or plan in operation, that does not have plenty of objectors, especially in the field of social welfare. Their report, to us, has all the earmarks of a "Wickersham Report." It has failed but let us keep on with the noble experiment. To quote their opening remarks, "As a result the conclusion has been reached that no system of health insurance now in existence completely conforms to the policies set forth." (Policies those of, free choice of physician, limitation of benefits to medical service, exclusion of individuals or organizations that might engage in health insurance for profit.) "Therefore the committee records its opposition to the introduction of any of the present systems to the United States."

Now let us suggest why other insurance plans do not include these policies, and not be "patting" ourselves on the back that we have thought of policies that other plans have neglected.

In the first place, Choice of Physician—We maintain that the employe under Mutual Health Service does not have free choice. Sec. 9, a, b, and c, limit him. Particularly he cannot have a physician who does not signify his intention of providing service according to the Mutual plan. Then, too, let us face an unpleasant fact. Commercial companies have found to their sorrow that there are many "chiselers" among our colleagues, and when the local committees start to discipline this group, an unpleasant time will be had by all.

Limitation of Benefits to Medical Services.—Of course, the taking away of compensation for illness will aid such a plan, but then what have you to sell such an individual? The state now provides by statute medical care when ill and indigent, so why should he pay premiums for protection that he already has, and if he can afford to buy Mutual Service Insurance, he is foolish if he does not add a few dollars more and buy health insurance from commercial companies that will protect his family when he is sick. The thinking man wants to protect his family when ill and keep off the welfare. The cost of medical care in the average family is small compared to the loss of wages from illness.

Exclusion of Individuals or Organizations that Might Engage in Health Insurance for Profit.—What right has the medical profession to enter another field of business and ask for an exclusive franchise in addition to their license to practice? Do you think that commercial insurance companies will idly stand by while such legislation is being enacted? What colossal crust for the profession to even ask or suggest such a proposition.

Is it not obvious why insurance groups have not included these above policies in their plans?

Truly the committee are seers and prophets of the highest order when they state, "Such a plan *must come about eventually and, therefore, we must endorse and accept this plan.*"

We maintain that half the social strife in the world today is due to radical theorists taking advantage of the unrest of ignorant individuals, and constantly talking revolution and overturning of established principles. Will someone tell us why the world must be revolutionized in the next few months, and why must the medical profession become "Brain Trusters" and revolutionaries instead of evolutionaries? Perhaps things are all wrong but the pendulum follows physical laws and always returns to the right, unless someone stops the works.

Which would be a greater catastrophe, to blunder into an insurance or panel form of practice (one cannot cover up the plan by the title "Mutual Health Service") brought about by our fear and greed of economic conditions, or to have a form of state medicine thrust upon us? One cannot deny the danger of political involvement in the insurance plan, and if the latter (state medicine) should come true, it would be in such a form that the cost would be equitably distributed and profits not destroyed by political grafters or competitive companies. True, state medicine does not contemplate any too free choice of physician but it does fulfill the other two requirements of mutual service, *viz.*, limitation of benefits and limitation of competition.

Let us get down to specific facts in regard to this health insurance plan.

The medical profession resents the encroachment of lay groups in the practice of medicine and have consistently fought such invasion, yet here we are making plans to encroach on the established business of lay groups, because the other fellow's pasture appears greener, and call it what you may the motive behind this plan is fear and greed. Why not ask for volunteers among the profession to give up their practice and go into the insurance business and leave the field free for the remainder. To our mind this is just as logical a solution as putting us all in the insurance business and dividing the profits.

Hospitals, group clinics, corporations and contract medicine have come in for a great deal of criticism by the profession for entering the active field of medicine. They May STATE JOURNAL in the editorial section says, "Beware of Group Hospital Insurance Plans." "The plan of Mutual Health Services, published in this issue, provides for hospital, dental and medical services." They left out nursing and control of the pharmacists. It would not be surprising for the hospital journals to come with a similar editorial, Beware of the Medics! They want to seize control of the hospitals, nurses, dentists and pharmacists; of course their plan is masked under the title of mutual benefit, but it is as clear as the nose on your face that the doctors are hungry and wish to control our business as well as their own. If we don't subscribe to their plans they will take the business away from us and give it to other institutions. Fight the medical trust. Arise, all you nurses, dentists, druggists, patients and directors of our institutions less you be destroyed by these demons. This is not far fetched; to our mind it is likely to happen in retaliation, and if I were on the other side of the fence, I know I would feel the same.

State medicine has been repeatedly condemned as stopping advancement in science and giving poor service to society. When mutual health insurance comes into practice the panel doctor will lose his incentive to advance the art of medicine, as if he will take advantage of the post-graduate work, what a pitiful altruistic sop to throw him, and we grieve for the service the poor premium payer will receive when he cannot demand the services he wishes.

Mutual health plans have been tried by fraterni-

ties and communities with great financial loss, even though held in check by oaths of brotherhood, feality and tight contract prices with the doctors, and very few of these have ever agreed to pay the insured enough sick benefit or compensation to make malingering worth while. Ideally theoristic but practically failures.

Mutual health service as proposed is distinctly class legislation. Keep the wealthy out, so we can hook them more, and put in the lower wage bracket class those whom we have to serve on credit, when they are out of work. Where has the vaunted charity and goodness of medical practice gone?

Industry at the present time has its back to the wall and has stood all that it can bear as far as unionism and the "check off" system is concerned, and yet the success of mutual health insurance is dependent upon the coöperation of industry in the "check off" premium. We freely predict a finish fight in this battle, and the medical profession will have enough to do taking care of their own business. When they become involved with these two groups it is easy to see they will be bruised and battered in the scrap.

Let us not be washed away in the maelstrom of social reform that is flooding the nation, or be enmeshed in the net of restrictions that labor and industry are now fighting because they experimented with plans. Let us retain the individualism of our profession and think of the future generations of physicians who will be involved and trapped by actions that we may take.

Careful analysis of the report of the Economics Committee published last summer shows the physician to be much better off than other groups, and lastly, if each of us practice the art of our science and conscientiously give our best service we will be remunerated accordingly. The science and social experience in the practice of medicine proves to us that not all are created equal, and all of us cannot be at the top in professional and commercial success.

Let us keep our feet on the ground. Let us have our own opportunity of individual success. It is too bad if some of us fall by the wayside, but we took that chance when we started the hard road to a medical education. Let us stick together for common good, but let us not as a body destroy individualism, in the responsibility of the patient, and in the practice of medicine.

Sincerely,
W. C. ELLET, M.D.

FROM A. V. WENGER, M.D.

In view of my efforts in favor of the adoption of the report of the committee on medical economics, my comments are perhaps a bit superfluous.

While not active on the floor, I contacted many delegates who were lukewarm, and not a few who were directly opposed to the plan. After considerable discussion it developed that the attitude of indifference or opposition was in most cases based on a misconception of one or more of its provisions.

In view of these discussions I came to the conclusion that we would have rather rough going to secure approval of the plan in the House of Delegates. It was with some surprise and no little satisfaction that I heard the roll call approving the plan 61 to 9.

The only suggestive comment I have to make follows:

Re Allotment of funds:

If post-graduate work is to be available to general practitioners and specialists alike, I should suggest that the 2 per cent deduction be made from the specialists' allotment also. As provided in the report it is deducted from the general practitioners of medicine and dentists allotments only.

Sincerely yours,
A. V. WENGER, M.D.

FROM EX-PRESIDENT H. E. RANDALL

I have been pondering Mutual Health service since Dr. Alexander Lambert made his report to the delegates of the A. M. A. many years ago. Was convinced then as I am now that since a certain portion of our population are unable either by mental, physical or economic conditions to be self supporting in the old sense of "rugged individualism" that some system of help is necessary both to the doctor and to the families he may serve.

We all realize we are in a world that has changed amazingly in the years since 1890 when land could be had for the asking from a generous government. Raising the standard of living and the strife of modern competition, combined with higher taxation of land and homes, has closed the doors to many apportunities. It has seemed only too clear that America must in time follow the experience of the older European nations, in providing some form of social medicine. Not because we want it, but because we are "faced not by a theory but by facts."

In every system proposed there are certain inherent defects both from the standpoint of physician and the patient, professional and ethical and the assurance of proper care.

The defects of various European systems have been studied and are well known. An attempt has been made by our committee to avoid these mistakes and to offer a plan which, while not perfect, yet has been a sincere attempt to avoid the defects of previous systems of social health insurance.

H. E. RANDALL, M.D.

FROM R. H. HOLMES, M.D.

I have given this matter of Health Insurance considerable attention, which course I believe should be followed by every member of the State Medical Society.

I have been fortunate (or unfortunate) in having had some experience with sickness insurance, both from the administrative part and the medical side, which makes me, as a physician, primarily opposed to this type of service. Each and every organization of this character is made use of by some for political self-aggrandizement. In every organization of this kind, the trend is to place the doctor in a position of a professional employe rather than an independent practitioner. I believe it is impossible to prevent, no matter how carefully the organization is made, to protect the relation between the doctor and his patient and not have a third party, even though it may be a commission of physicians. These are the main objections I have to this proposition as a whole.

I would like to list my objections to the plan as presented.

First—Fixing the upper income limit at $1,500 will make eligible approximately 90 per cent of the people in this community.

Second—I do not understand in what way Mr. Sinai and the committee feel that the medical profession would have control of this plan by a total of three members on a board of eleven. It is possible that the doctor of dental surgery and the registered nurse would look at this matter from the same position as the doctors of medicine. It is inconceivable that the pharmacist or the hospital superintendent would be partial to the medical profession. The growing tendency of the hospital superintendents to believe that the staff should work for the hospital and not the hospital for the staff is to me sufficient evidence. Certainly the other four members will not be in sympathy with the medical prob-

lem in regard to sections D and E of Article 3, and in particular, fees for physicians and investments of funds.

I have no complaint with Articles Four and Five.

Article Six—We have another situation in which the judicial body gives even less percentage of power to the medical profession.

Article Eight—Demonstrates conclusively the political angle of the board of governors and the lack of control by the medical profession.

Article Nine—Splendidly organized article, but provides absolutely no guarantee to the medical profession that restrictions may not be added by the board of governors.

Articles Ten, Eleven, and Twelve—Satisfactory.

Article Fifteen—I believe the average worker in this salary limit, and we must remember that the average is closer to $1,000 a year than to $1,500, would be unable to afford to pay the schedule rate for an average family, that is three children and two adults. The industrial men with whom I have conferred would not be interested in this plan unless it was made compulsory. The cost of collecting this amount under a voluntary system would in my opinion take more than the 13½ per cent allowed for administration and surplus.

Article Nineteen—Referring to the comment, I feel that the argument is a fallacy.

Article Twenty—Leaves a decided loop hole in satisfactory management.

Article Twenty-two—Allots this fund to the board of governors comprised mainly of non-professional people who are to dictate "with the *advice* of the state medical and dental societies" how professional men are to be given post graduate training.

The *American Medical Association Bulletin* has covered rather completely the general objections to these plans.

I believe it will be impossible to keep this program isolated from non-employment insurance.

I believe this plan is instigated as part of the program of certain sociologists and industrialists who resent the rugged individualism and continued independence of the medical profession. Those practitioners in Detroit and other large centers have found to their amazement and disappointment and loss of self-respect, the relationship they now bear to the hospital since the occasion of the Afflicted Childrens Act.

This program is offered as an experiment. A number of delegates voted for it because they felt that if any county wanted to try this out, they should be allowed to do so, forgetting at the time that each county's problem and reaction to it is reflected on all other counties. Witness acceptance of the Couzens Fund program.

I must state that this proposition has not been offered the society I represent, and these are my personal opinions. However, I do believe that the general attitude of our society is against the practice of Mutual Health Service.

Very truly yours,

ROY HERBERT HOLMES, M.D.

FROM EX-PRESIDENT A. P. BIDDLE

In reply to your letter of the 23rd instant relative to comments and suggestions on the proposed plan for Mutual Health Services, I would state that my views are well known to the Committee on Economics and, further, I feel that, as I am member of the House of Delegates and shall have to pass upon the recommendations of the Committee, it were better that no further comment or suggestion be made by me at present.

Sincerely,

ANDREW P. BIDDLE.

A PRACTICAL ALTERNATIVE TO STATE MEDICINE

The Michigan State Medical Society has taken a revolutionary step by its decision of April 12, 1934, endorsing the idea of experimentation with a voluntary health insurance plan. It marks the beginning of a new epoch in the history of American medical socio-economics. It is the first blow to the standpatters of the status quo. It brings us right into the realm of socialized health service with its historical climax of state medicine.

On April 12, a special meeting was held to study a plan known as "Mutual Health Service." The much misunderstood term "insurance" is not used for practical reasons. After considerable debate and thorough discussion, the Michigan Society went on record favoring the principle of insurance to distribute cost of health service. Considering contemporary medical economic thought and the combative attitude of medicine and dentistry toward the mildest form of socialization of health services, we must view the present Michigan step—a reversal of its position three years ago—as epoch making. This action is motivated by that noble idealism expressed in the Michigan Society elaborate Health Survey of 1933.

"Ever since the English Poor Law of 1601 the right to live has been guaranteed in all civilized countries. The right to live implies more than the mere necessities of life. Adequate medical service must be distributed to the entire population. It would be manifestly unjust to deny any citizen relief from incapacitating illness."

In substance, the Michigan experiment is a voluntary health insurance plan in which the health profession, the industries and wage earners participate. The details of plan are given elsewhere. The question we now raise is whether the Michigan proposal is a practical alternative to state medicine where health services are distributed free to the entire population.

What is state medicine? State medicine is a tax-supported system of social insurance where the people receive free medical and dental care and physicians and dentists are employed in clinics by the state on a salary basis. In Soviet Russia we find a typical example of a state system. Will the Michigan voluntary plan fulfill in theory and in practice the public need of universal and adequate health care? If universality is our objective, some believe a system of state medicine is more practical.

The issue is so vital that professional groups are organized advocating the state system for immediate adoption. Since a change is needed, they contend common sense would suggest a change to state medicine. The whole medical picture takes on new form. Shall we choose either extreme—voluntary insurance or state medicine—or shall we choose a compromise plan somewhere between these two extremes?

If state medicine is not feasible, is the Michigan plan a practical alternative? It is certainly the only concrete, flexible and carefully thought-out proposal so far formulated on a state-wide basis. It embodies the desirable control features by the medical professions, it keeps out of the administration lay and commercial groups and politicians and enables labor and industry to show their real and sincere interest in the people's health. Above all, it gives for the first time in American medical history physicians and dentists an opportunity to gain experience in handling the health problem of the nation on a co-operative and mutually protective basis.

One thing is certain, that we are not so near a final solution of the distribution problem as we think we are. The time is ripe to unite and consolidate the leadership of the medical professions—medicine and dentistry—in order to crystallize a common-sense and practical viewpoint for the pro-

tection of the professions and the people. Society and the professions need protection against possible exploitation by an ill conceived system of insurance practice. Whatever the imperfections of the Michigan plan may be, it points to the need of adopting an aggressive policy, preparing safety devices against the establishment of commercialized insurance which may take advantage of the disorganized professions. Whether the principle of insurance or taxation or both are embodied in future plans, we must be guided by general policies and principles to safeguard the interests of the public and the professions.

Let us not merely watch the Michigan experimental plan or other plans but let us gain experience with a mutualized form of health service of our own making by early initiation and speedy action.

A. J. A.

Editorial in the June *Dental Outlook*.

More than 600 requests have been received for copies of the May JOURNAL supplement which contained the proposed plan for Mutual Health Services. The copies were sent without comment. The following are a few of the voluntary expressions that have been received. Extracts are being presented for our members' information. Comments are appearing in various medical and lay publications. An endeavor is being made to compile them. Over 6,089 inches of newspaper space in the state has been devoted to presentation and discussion of the plan. About twenty-seven editorials have appeared in the lay press. They are all on file in a scrap book for reference and record.

A. W. Freeman, M.D.,
The Johns Hopkins University,
615 North Wolfe Street,
Baltimore, Md.

"May I congratulate you on the fact that Michigan, under your leadership, is viewing the subject of the future of medical service realistically and rationally. I am tremendously concerned for fear the present leadership of the profession in this country will succeed in delaying any satisfactory solution of the problem so long that commercial organizations to supply medical service will be enabled to get a foothold. This seems to me to be the worst thing which could possibly happen, and it is a pleasure to see that one state, at least, is determined that it shall not happen."

H. E. Friesell, Dean,
University of Pittsburgh,
School of Dentistry,
Pittsburgh, Pa.

"I wish to compliment the Michigan State Medical Society on the thorough and intelligent manner in which it has been studying the question of Mutual Health Service.

"Your Society has done and is doing a splendid work and a very much needed one on this subject."

Graham L. Davis, Director,
The Duke Endowment,
Power Bldg.,
Charlotte, N. Carolina.

"I requested recently and you sent me three copies of the Supplement to the Journal of the Michigan State Medical Society for May on the subject of Mutual Health Service. When I produced this at the recent meeting of the members of the Committee on Group Hospitalization of the North Carolina Hospital Association, they all wanted copies, but I did not have enough to go around."

A. C. Christie, M.D.,
1835 Eye St. N. W.,
Washington, D. C.

"I have studied the Report of the Committee on Survey of Medical Services and Health Agencies of your Society with the greatest interest. It is a most thorough and excellent report and will undoubtedly be of great value to other localities."

George Crownhart, Secretary,
The State Medical Society of Wisconsin,
Madison, Wisconsin.

"I would be less than frank, if I did not say that none of our studies made to date in Wisconsin, nor our investigations of plans elsewhere, indicate to us an attack on the problem along the lines that you in Michigan have outlined. I would not have you think for a moment that we are so presumptuous as to say that we are right about this matter, but rather that we have yet to be convinced that the gains to be had will offset the losses, using both the word 'gain' and the word 'loss' from the viewpoint of the service that the public does or will obtain. You may be certain that we are studying your plan with the greatest of interest even though we feel that, as Mr. Kingsbury admitted, every voluntary scheme is merely a bridge to a compulsory scheme."

Rodney A. Yoell, M.D.,
14 7th Avenue,
San Francisco, Calif.

Telegram:

"Just read Supplement of Michigan Journal of Mutual Health insurance proceedings at House of Delegates stop Magnificent piece of work stop We in California have just done same thing at State Convention Riverside feel your action regarding American Medical Association correct one hundred percent will write letter asking further information please send collect three copies of Supplement giving Delegates proceedings four nine naught Post Street San Francisco"

Walter P. Bowers, M.D.,
Managing Editor,
The New England Journal of Medicine,
8 The Fenway,
Boston, Mass.

"The action of your House of Delegates is of great interest and should be studied by the other State Medical Societies for it seems to me to be a logical step toward meeting the problems now confronting this country."

P. H. Van Itallie,
Technical Editor,
Drug Topics,
330 West 42nd Street,
New York, N. Y.

"According to a paper which was recently published in the Business Week, a mutual health service plan whereby Michigan wage earners and their families would receive complete medical care of $27 per person annually, was recently approved tentatively by the Michigan State Medical Association House of Delegates.

"Because this plan proposes a central fund from which payments would be made to the various divi-

sions of health service, including drug distributors, we would very much be interested in receiving further information on this subject.

"As you probably know, DRUG TOPICS is the national weekly newspaper for retail druggists. It is in this publication that we wish to comment on the plan proposed by this Association."

Dr. J. Newton Hunsberger,
514 West Main Street,
Norristown, Pa.

"I noticed in Dr. Olin West's report that the Trustees of American Medical Association took no notice of your State's report of conditions in England regarding contract practice. Many of our men think this State Medicine would be a good thing for this country and the belief is growing fast. We are our own menace."

MEDICAL HISTORY

There remain on hand a number of sets—two volumes each—of the *History of the Michigan State Medical Society,* compiled by the late C. B. Burr, M.D. The reviewers have commended this historical record of our Society. A set should be in every member's library.

As long as they last you can obtain these two volumes upon receipt of your remittance of Five Dollars—half price. Send in your orders to the State Secretary.

SURVEY REPORT

Upon remittance of $1.50 you can secure a copy of the report on the Survey of State Health Agencies and Medical Services. This report should be read by every member. Send for a copy today.

ANNUAL MEETING

Our annual meeting will be held in the W. K. Kellogg auditorium in Battle Creek on September 11, 12 and 13. The August JOURNAL will contain the preliminary program announcements. The complete program will appear in the September issue. Please note the dates and plan to attend what promises to be a most instructive and enjoyable meeting. Battle Creek members propose to be most royal hosts.

PLAN FOR MUTUAL HEALTH SERVICES

Shortly after the issuance of the May JOURNAL and the publication in the *Journal of the A. M. A.* of the resolution Michigan delegates were instructed to introduce at the Cleveland A. M. A. meeting inquiries and requests commenced to come in for copies of the proposed plan for Mutual Health Services and the Luce-Sinai report. These inquiries came from all over the country and have now passed the 600 mark.

THE PENALTY OF LEADERSHIP

The following literary gem was originally written, we are told, as an advertisement for The Cadillac Motor Car Co. It contains a truth which applies to the physician, druggist or manufacturer, hence we reprint it here for our readers.—Editor's Note.

"In every field of human endeavor, he that is first must perpetually live in the white light of publicity. Whether the leadership be vested in a man or in a manufactured product, emulation and envy are ever at work. In art, in literature, in music, in industry, the reward and the punishment are always the same. The reward is widespread recognition; the punishment, fierce denial and detraction. When a man's work becomes a standard for the whole world, it also becomes a target for the shafts of the envious few. If his work be merely mediocre, he will be left severely alone—if he achieve a masterpiece, it will set a million tongues a-wagging.

"Jealousy does not protrude its forked tongue at the artist who produces a commonplace painting. Whatsoever you write, or paint, or play, or sing, or build, no one will strive to surpass or to slander you, unless your work be stamped with the seal of genius. Long, long after a great work or a good work has been done, those who are disappointed or envious continue to cry out that it cannot be done. Spiteful little voices in the domain of art were raised against our own Whistler as a mountebank, long after the big world had acclaimed him its greatest artistic genius. Multitudes flocked to Bayreuth to worship at the musical shrine of Wagner, while the little group of those whom he had dethroned and displaced argued angrily that he was no musician at all. The little world continued to protest that Fulton could never build a steamboat, while the big world flocked to the river banks to see his boat steam by.

"The leader is assailed because he is a leader, and the effort to equal him is merely added proof of that leadership. Failing to equal or to excel, the follower seeks to depreciate and to destroy—but only confirms once more the superiority of that which he strives to supplant.

"There is nothing new in this. It is as old

as the world and as old as the human passions—envy, fear, greed, ambition, and the desire to surpass. And it all avails nothing. If the leader truly leads, he remains—the leader. Master-poet, master-painter, master-workman, each in his turn is assailed, and each holds his laurels through the ages.

"That which is good or great makes itself known, no matter how loud the clamor of denial. That which deserves to live—lives."

STATISTICAL DATA IN HUMAN ANATOMY

From the *Journal of the A. M. A.*:

To the Editor:—In our daily newspaper (Grand Rapids Press) an item caught my eye in the section on "This Curious World." The statement is made that "the blood vessels of an adult have a combined length of about 100,000 miles." May I ask you whether this statement has the backing of scientific authority. For a long time I have wanted to know whether any estimates have ever been made of the combined length of nerves of the body and of the blood vessels. Also whether the total number of white and red corpuscles has ever been estimated. These figures would be of interest in talks to the public which I sometimes give. If there is any publication you recommend along this line, I will be grateful.

A. W. WOODBURNE, M.D., Hastings, Mich.

ANSWER.—Estimates of the total length of blood vessels in the adult human body would necessarily be only approximate. Krogh, in his book on the capillaries, has made a calculation of the total length of blood capillaries in the muscles. He states that there are more than 100,000 kilometers of capillaries in the muscles alone (62,000 miles). Since the muscles constitute only about 40 per cent of the weight of an adult healthy body, it would be conservative to estimate the total length of all capillaries in the rest of the body at 38,000 miles. Therefore, the statement that there are more than 100,000 miles of blood capillaries seems to be conservative.

No estimates of the total length of nerve fibers in the human body seem to have been made, but several estimates have been made in their number. Vierordt estimates the number of nerve fibers in the spinal nerve trunks at over 800,000, the number of fibers in the cranial nerves from the third to the twelfth, inclusive, at 200,000 (Krause's Anatomie). The number of fibers in the optic nerve have recently been counted by Arey (1934); the two (right and left) together in the human adult contain about 2,600,000. This gives a total of 3,600,000 fibers without the olfactory nerves. These figures are undoubtedly far too small, because the older counts were made by methods that did not permit observation of the finer fibers. Since many of these nerve fibers branch repeatedly toward their termination, the number of fibers in the nerve trunk would be only a fraction of the total number of nerve fibers in the periphery.

The number of red corpuscles in the body has been estimated at twenty-three million million (Vierordt). The proportion of white blood cells to red cells is about 1 to 666, so that the blood contains only about thirty-three thousand million white cells.

A good reference book for statistics of this kind is Vierordt's Anatomische, physiologische und physikalische Daten und Tabellen, Jena, Gustav Fischer, 1906. A considerable amount of such information is contained in Harvey's Simple Lessons in Human Anatomy, Chicago, American Medical Association, 1931.

COUNTY SOCIETIES

BERRIEN-CASS COUNTY

The meeting was called to order by the president, Doctor Richmond, following a very interesting talk by Dr. Walter Maddock on "Peripheral Vascular Diseases."

Dr. Richmond asked the Society to take action on the County Contract coming up next month. Drs. Mitchell and Emery moved to instruct the Public Relations Committee to deal with the Board of Supervisors next month, expressing ourselves as satisfied with the present contract. Carried.

The secretary asked the Society's wishes as to July and August meetings. It was noted that the lawyers are incorporating bar and thought that they might be able to cast some light on our problems.

Doctor Witt, after discussing the fact that we are not well posted on social changes which are inevitable, urged that we become more intelligent about these subjects before, rather than after, they occur. He asked that we have such a meeting with the lawyers, since their problems, as an allied profession, are similar to our.

The meeting was turned over to the Cass County Society for a short business meeting, in which Dr. Loupee asked that the Society come to an understanding with their Board of Supervisors. The first step should be an audit of costs. Dr. McCutcheon suggested getting figures from the county treasurer and publishing them in the county papers. Drs. Lyman and McCutcheon moved to appoint a committee of two to carry out this suggestion, covering the period of July 1, 1933, to date. Drs. Harmon and Lyman were appointed.

After thanking the speaker for his paper, the meeting was adjourned.

* * *

Dr. John E. Ames, of Niles, was elected Mayor of Niles in April. He came here six years ago to begin practice. Becoming Mayor in six years—more power to him!

EDWIN P. VARY, *Secretary-Treasurer.*

GOGEBIC COUNTY

A special dinner meeting of the Gogebic County Medical Society was held at the St. James Hotel, Ironwood, May 10, 1934, at 6:30 P. M. This meeting was called to hear a program presented by the Committee on Preventive Medicine of the Michigan State Medical Society. Twenty-four men were present. The program was as follows:

1. Differential Diagnosis in the Acute Communicable Diseases
   JOHN E. GORDON, M.D., Detroit, Director, Division of Epidemiology, W. K. Kellogg Foundation
2. The Economics of Preventive Medicine
   (a) The Program of the Michigan State Medical Society
      L. O. GEIB, M.D., Detroit, Chairman, Committee on Preventive Medicine
   (b) General Principles
      HENRY F. VAUGHAN, Dr.P.H., Detroit, Member of Board, W. K. Kellogg Foundation
   (c) Application to Counties
      G. M. BYINGTON, M.D., Battle Creek, Associate Medical Director, W. K. Kellogg Foundation

The talks were illustrated with lantern slides.
The meeting adjourned at 10:30 P. M.

FRANK L. S. REYNOLDS, M.D., *Secretary.*

LUCE COUNTY

The Luce County Medical Society met at the Newberry State Hospital the evening of May 9, 1934.

The program for the evening was:

1. Differential Diagnosis in the Acute Communicable Diseases
   JOHN E. GORDON, M.D., Detroit, Director, Division of Epidemiology, W. K. Kellogg Foundation
2. The Economics of Preventive Medicine
   (a) The Program of the Michigan State Medical Society
   L. O. GEIB, M.D., Detroit, Chairman, Committee on Preventive Medicine
   (b) General Principles
   HENRY F. VAUGHAN, Dr.P.H., Detroit, Member of Board, W. K. Kellogg Foundation
   (c) Application to Counties
   G. M. BYINGTON, M.D., Battle Creek, Associate Medical Director, W. K. Kellogg Foundation

Following Dr. Gordon's talk, a dinner was served in the new Receiving Unit of the Newberry State Hospital.

After partaking of a delightful dinner the Luce County Society had the remaining portion of the program.

We appreciated greatly being able to assist the Committee on Preventive Medicine of the Michigan State Medical Society in holding this regional conference, which was greatly enjoyed by everyone present.

In addition to the above mentioned men on the program, those present were: Dr. F. P. Bohn, Dr. H. E. Perry, Dr. R. E. Spinks, Dr. E. H. Campbell, Dr. C. B. Toms, Dr. Jean B. Christie, Dr. F. O. Mesiter, and Dr. George F. Swanson, of Newberry; Dr. R. A. Tucker and Dr. Gail Broberg of Manistique; Dr. G. A. Conrad, Dr. F. H. Husband, J. G. Blain, I. V. Yale, F. W. Tamblyn, C. J. Ennis, F. C. Bandy, of Sault Ste. Marie; Dr. G. B. Cogger of CCC camp, Newberry; Lt. B. Frazen of CCC Camp, Rexton; Lt. A. C. Neeseman of CCC Camp, Germfask; and Major W. J. Froitzhoim and Lt. C. R. Moon, of Fort Brady, Michigan.

MUSKEGON COUNTY

PUBLIC RELATIONS COMMITTEE

The Public Relations Committee is striving to continue with their program. It might be well to remind the members of the society that while perhaps a few may feel themselves injured by some of the new plans, the ultimate result will be advantageous to all, both in furthering a better system of practice, in carrying out the unification of the medical society, better medical care of the people, and more remuneration for the doctor. If anyone feels that his rights are being wrongfully neglected, come to the business meetings of the society and interpose your objection.

INSURANCE EXAMINATION

Add the following examination schedule to your list.

Franklin Life Ins. Co.	Regular	$5	Juvenile	$2
Reliance Life Ins. Co. of Pittsburgh	Complete	$5	Child's	$2
Polish Falcons of America	Regular	$5		
Continental Assurance Company. Form L400		$3		

We again ask all members to submit whatever insurance blanks that have not been scheduled. Some of the fraternal companies are having the individual pay for his examination, later to be reimbursed. There should be no exception made to these fees in these cases. Be sure to collect the dollar for examinations away from your office.

Since there was no time limit set on the raise of price of insane examinations and Judge Thompson seems very indignant that the medical profession should take exception to her arbitrary schedule of prices for such, there has resulted considerable confusion. No member of the society should make such examination or sign any papers for commitment of insane unless the fee of $5.00 is paid. When the physician realizes the responsibility which he takes in such proceedings, it seems that any change from such position is decidedly ill-advised.

About May 15 the new arrangement for infant feeding clinics will be established. Under this, the clinics will be held in each hospital twice a week, making four clinics a week, under the supervision of those members of the medical society who are willing to donate one period a week. Internes and student nurses will aid as a part of their educational training. These clinics will be allowed only for infants from families on the welfare list of the county and from those families who have written authority from their family physician. No medical treatment will be advised, such children being sent to their family physician. This is to take the place of the present established baby clinics in the schools.

Dr. Wilson reports one hundred per cent cooperation by the physicians of the county in regard to the immunity program. He has five cards not signed, so it is hoped that those who have not signed will get in touch with him, so that he can complete his list and progress be made in this move.

A ruling was made in regard to pre-school clinics.

First—that the physician in charge should be given some compensation.

Second—that only children of parents on the welfare list and children who have written authorization from their family physician to have the examination made, be allowed in the clinic.

If any member of the society has any other suggestions for the committee to work on, we would be glad to coöperate.

An excellent article in the May *American Mercury,* entitled "The Plight of the Doctor," will show you what we must fight if we are to preserve the private practice of medicine. The editor has a copy in his office which may be borrowed for forty-eight hours if desired.

SECRETARY'S REPORT

The regular April meeting was held April 20, at the Century Club, at which nine dentists joined forty-five members of the society to listen to a splendid paper on "Acute Infections of the Throat and Neck" by Dr. A. C. Furstenberg, of Ann Arbor. The few who missed this probably will never get another opportunity to have this subject presented to them in such a fine style.

At this meeting Dr. Bertram Morse of Whitehall, and Dr. Adolph Dasler of Muskegon Heights, were elected to membership.

A special meeting was held April 13 at the Hackley Union Bank Building.

The resolution passed in March regarding donation of services in projects where other workers are paid was amended, to add the word "adequate" in reference to the physicians receiving "adequate" compensation.

A motion was made and passed that the Probate Court be notified that members of the Muskegon County Medical Society demand a fee not less than

$5.00 for examinations in mental cases. The Public Relations Committee was asked to investigate if the long questionnaire in these cases is legally required.

The x-ray fee schedule was accepted and the last obstacle to printing our complete fee schedule was overcome.

The Public Relations Committee presented its plan for taking over the city health department. There was considerable discussion and it was finally agreed that the Public Relations Committee should, with the consent of the City Commission, complete this plan and put it in effect for one month.

SHIAWASSEE COUNTY

"The Use and Misuse of Digitalis" was the subject of an address before the Shiawassee County Medical Society at the monthly meeting at Memorial Hospital, May 20, 1934, by Prof. Frank N. Wilson of the Michigan University Medical Department.

The meeting was the largest in point of numbers that has been held in a long time. The speaker said that digitalis is too powerful a drug to be used indiscriminately by the laity, and although it has been a heart remedy for many years, there is a great deal to learn about its use yet.

By reason of the fact that there is such a wide difference in the reactions of the drug in different patients, it should only be prescribed by physicians who may watch the effect, he said. There are not a few kinds of disease in which it is sometimes used that are actually made worse instead of better, he declared.

Doctor Wilson, who is a professor of cardiology at the university, is in much demand by the profession, not only in Michigan but in large medical centers outside, and the local society was fortunate in having him here.

Dr. I. W. Green, a member of the committee of medical economics of the State Medical Society, gave a very interesting report of the recent meeting of the committee.

Among those from out of town in attendance were Drs. W. S. Bell, Elsie; W. M. Taylor, Ovid; W. B. Fillinger, Ovid; E. J. Carney and C. J. Richards, Durand; F. L. Covert, Gaines; G. B. Wade, Laingsburg, and Dr. Chambers, Flint, and Dr. Buzzard, Chesaning.

May 7 was the date of the first regional conference of the Committee on Preventive Medicine of the Michigan State Medical Society, which was held at Owosso at a six o'clock dinner at the Hotel Owosso. There were twenty-three physicians present.

The program consisted of the following:

1. Differential Diagnosis in the Acute Communicable Diseases
   JOHN N. GORDON, M.D., Detroit, Director, Division of Epidemiology, W. K. Kellogg Foundation
2. The Economics of Preventive Medicine
   (a) Program of the Michigan State Society
   L. O. GEIB, M.D., Detroit, Chairman, Committee on Preventive Medicine
   (b) General Principles
   HENRY F. VAUGHAN, Dr.P.H., Detroit, Member of Board, W. K. Kellogg Foundation
   (c) Application to Counties
   G. M. BYINGTON, Battle Creek, Associate Medical Director, W. K. Kellogg Foundation

The talks were illustrated with lantern slides, and were very interesting. The program was concluded at nine-thirty and the party left for Clare to spend the night, intending to be at Traverse City the next forenoon.

W. E. WARD, *Secretary-Treasurer.*

UPPER PENINSULA MEDICAL SOCIETY

The thirty-seventh annual meeting of the Upper Peninsula Medical Society will be held August 16 and 17, 1934, under the auspices of the Gogebic County Medical Society, at Ironwood, Michigan.

Officers of the Society are: Dr. John J. Walch, president; Dr. Frank G. H. Maloney, vice president, and Dr. Frank L. S. Reynolds, secretary.

Committees in charge of the meeting are:

Program Committee—Dr. W. E. Tew and Dr. A. J. O'Brien.

Entertainment Committee—Dr. T. R. Rees and Dr. H. A. Pinkerton.

Ladies Entertainment—Mrs. A. J. O'Brien, Chairman, Mrs. C. E. Stevens and Mrs. F. L. S. Reynolds.

Headquarters for exhibits, business and scientific sessions will be at the Grand View Hospital.

PROGRAM

Thursday, August 16

Morning Session

9:00—Registration of Members at Grand View Hospital

10:00—Address of Welcome
FRANK L. S. REYNOLDS, M.D., Superintendent, Grand View Hospital
FRANK G. H. MALONEY, M.D., President, Gogebic County Medical Society

10:15—Response and President's Address
JOHN J. WALCH, M.D., President, Upper Peninsula Medical Society, Escanaba, Michigan

10:30—The Differential Diagnosis of Common Neurological Conditions as Met with in General Practice
JOHN L. GARVEY, M.D., Milwaukee

11:30—Management of Hypertension
CHARLES L. BROWN, M.D., Associate Professor of Internal Medicine, Ann Arbor, Michigan

12:30—Adjournment for Lunch at Grand View Hospital

Thursday, August 16

Afternoon Session

2:00—X-ray Diagnosis of Chest Lesions
STEWART PRITCHARD, M.D., Medical and Executive Director, W. K. Kellogg Foundation, Battle Creek, Michigan

3:00—Indications and Technic of Blood Transfusions
JOHN S. LUNDY, M.D., and
RALPH M. TOVELL, M.D., Mayo Clinic, Rochester, Minn.

4:00—Injection Treatment of Hemorrhoids
WALTER A. FANSLER, M.D., Minneapolis

5:00—Adjournment for transportation to Koerner's Resort, Spider Lake, Manitowish, Wisconsin, where banquet will be held at 7:00 P. M. The resort is one hour's drive from Ironwood and members will leave St. James Hotel promptly at 5:30 P. M. Road will be plainly marked.

Thursday, August 16

Evening Session—7:00 O'clock

Koerner's Spider Lake Resort, Manitowish, Wisconsin
Banquet and Dance
Cabaret Entertainment
Five Minute Talks by:
JOHN J. WALCH, M.D., President, Upper Peninsula Medical Society, Escanaba
F. C. WARNSHUIS, M.D., Secretary, Michigan State Medical Society
C. C. SLEMONS, M.D., Dr.P.H., State Commissioner of Health
GEORGE L. LE FEVRE, M.D., President, Michigan State Medical Society, Muskegon
Address—J. D. BRUCE, M.D., Director Post Graduate Medicine, Ann Arbor
Address—HON. WILLIAM COMSTOCK, Governor, State of Michigan

Friday, August 17

Morning Session

9:00—Sinus Infection—Diagnosis and Treatment
BERT E. HEMPSTEAD, M.D., Mayo Clinic, Rochester, Minn.
10:00—Allergy in General Medicine
CHARLES L. BROWN, M.D., Associate Professor of Internal Medicine, Ann Arbor, Michigan
11:00—The Technic of Nerve Blocking for Various Orthopedic Operations
JOHN S. LUNDY, M.D., and
RALPH M. TOVELL, M.D., Mayo Clinic, Rochester, Minn.
12:00—Art of Writing Medical Papers
RICHARD M. HEWETT, M.D., Chief of Publications, Mayo Clinic, Rochester, Minn.
12:30—Adjournment for Lunch
2:00—Golf Tournament—Gogebic Country Club

LADIES ENTERTAINMENT

MRS. A. J. O'BRIEN, *Chairman*

Thursday, August 16

1:00—Lunch followed by golf or cards at Gogebic Country Club

Friday, August 17

11:00—Out-door breakfast at Lake Superior
Golf or cards at Country Club in the afternoon. Tea will be served.

WOMAN'S AUXILIARY, MICHIGAN STATE MEDICAL SOCIETY

MRS. ELMER L. WHITNEY, President
18224 Wildemere Ave., Detroit
MRS. C. L. STRAITH, Secretary-Treasurer
19305 Berkley Road, Detroit

Ingham County.—With the election of officers for the coming year of chief interest, members of the Ingham County Medical Auxiliary held the annual meeting Monday noon, May 18, following luncheon at the Hunt Food Shop. Lilacs and tulips furnished spring decorations for the luncheon tables.

Mrs. D. A. Galbraith was re-elected president of the society and other officers chosen were: Mrs. Harry Weinburgh, vice president; Mrs. G. F. Bauch, secretary; and Mrs. Horace French, treasurer.

As committee chairmen gave their reports for the past year, they were presented with lovely corsages by Mrs. Galbraith, and at the close of the meeting the auxiliary presented Mrs. Galbraith with a beautiful bouquet of spring flowers.

Mrs. Howard Willson was in charge of arrangements for the affair.

Oakland County.—At the business meeting of the Oakland County Medical Auxiliary held on Friday, May 22, the following officers were elected for the coming year: Mrs. H. H. Pool, president; Mrs. E. W. Spohn, of Royal Oak, vice president; Mrs. F. B. Gerls, president-elect; Mrs. V. C. Abbott, secretary; Mrs. H. B. Yoh, treasurer.

Meetings have been discontinued until September.

Kent County.—The Woman's Auxiliary to the Kent County Medical Society held its annual luncheon and business meeting, May 16, at the Kent Country Club. The election results are as follows: Mrs. A. V. Wenger, president; Mrs. R. H. Denham, vice president; Mrs. F. P. Currier, secretary; Mrs. Lynn Ferguson, treasurer; Mrs. J. B. Whinery, corresponding secretary.

Mrs. P. L. Thompson, who has been historian for the Auxiliary since its beginning, gave a very interesting story of the year's activities.

Mrs. Robert H. Denham, social chairman, was in charge of general arrangements and was assisted by Mrs. J. B. Whinery, Mrs. Reuben Mauritis, Mrs. C. C. Slemons, Mrs. Norman Vann and Mrs. H. M. Blackburn.

DIFFERENTIAL DIAGNOSIS OF ACUTE POLIOMYELITIS

M. BERNARD BRAHDY, Mount Vernon, N. Y., and MAURICE LENARSKY, New York, discuss the first, second and third stages of the disease and state that of 1,123 patients admitted to the Willard Parker Hospital in 1931 with the diagnosis of poliomyelitis, 113 did not have poliomyelitis but in whom thirty-six other conditions were diagnosed after clinical study and laboratory investigation in the hospital. There were twenty-eight patients with ten different conditions who supposedly had poliomyelitis in the first stage; fifty patients with twenty different conditions simulating poliomyelitis in the second stage, and thirty-five patients with twenty-one different conditions simulating poliomyelitis in the second stage, and thirty-five patients with twenty-one different conditions simulating poliomyelitis in the third stage. The majority of these patients should have had a correct diagnosis made by their personal physician, even though the diagnostic difficulties are greater in the home than in the hospital. The family physician sees many patients in the first stage of the disease, at a time when he is unable, with certainty, to establish the diagnosis of poliomyelitis. However, in many instances it is possible to find some other condition to account for the patient's symptoms. There is a tendency, especially during epidemic periods, to make the diagnosis of poliomyelitis without obtaining a history and making a careful physical examination. As the disease progresses into the second or third stage there are more tangible symptoms on which to make a positive diagnosis of poliomyelitis. Parallel with the increase in the number of symptoms there is an increase in the number of conditions mistaken for poliomyelitis. Nothing is more important than a careful history and physical examination. If, in addition, poliomyelitis is considered as occurring in three stages, the different diagnosis will be simpler and the percentage of incorrect diagnoses will decrease.—*Journal A. M. A.* (April 28, 1934).

CONTRIBUTED ARTICLES

CARCINOMA OF THE COLON: SURGICAL CONSIDERATIONS*

CHARLES W. MAYO, M.D.†
Division of Surgery, The Mayo Clinic
ROCHESTER, MINNESOTA

Were I to attempt here to treat of all the important factors concerned with the surgical consideration of carcinoma of the colon, I would demonstrate two things: (1) that I was very foolish, and (2) that I had no consideration for my audience. I have sat through too many talks not to have learned that brevity is one of the main attributes of a successful conclusion. There have been times when only the strained bonds of civilization have protected the speaker from bodily harm. Realizing this, and the magnitude of this subject, I am constrained to confine myself to a few generalizations and a few details which impress me as of importance from the surgical viewpoint in dealing with carcinoma of the colon.

COÖPERATIVE CARE

The first essential in efficient treatment of the patient who has a surgical type of colonic disease is recognition of the fact that the management must be coöperative between specialized internists and specialized surgeons. No matter how excellent the surgeon, morbidity and mortality in these cases are definitely and favorably affected by such a scheme. Any condition of the colon which requires operation is serious, and most cases are of long standing before the patient has applied for help. For optimal results, it is necessary to group the patients in a division apart from that of general medicine and apart from that of general surgery; and so, let us put down as the first general point in this connection, coöperative management.

We shall not consider at this time those factors which are concerned with correct diagnosis of lesions of the large bowel; rather let us assume that the diagnosis has been made, and that we are interested in those details of preparation, operation, and postoperative care which in summation give to the patient the greatest chance for recovery and future well-being. We must keep in mind that in any type of surgery, it is the attention to details that usually makes the difference between success and failure.

PREOPERATIVE FACTORS

Preoperative preparation has five principal objectives: (1) to establish measures of rehabilitation; (2) to overcome obstruction; (3) to reduce the virulence of the organisms present in the colon; (4) to prepare the peritoneal cavity against peritonitis by vaccine, and (5) to estimate as nearly as possible the surgical risk involved.

We must keep in mind that the general measures employed vary with individual patients, but for the most part the following routine is followed. Sodium phosphate, saturated solution, 4 to 8 drachms (16 to 32 c.c.), or castor oil, 30 to 60 c.c., is given, the dose varying with the condition of the patient and the amount of obstruction present. Next, irrigation with physiologic saline solution is carried out twice daily, until twenty-four hours before operation. By these means the effects of obstruction are reduced, and the bowel is markedly emptied of the virulent organisms which frequently grow luxuriantly secondary to obstruction. Any barium which may have remained after roentgenographic studies, also is removed completely. As an added precaution, a flat roentgenogram of the abdomen, made about forty-eight hours after rectal administration of barium, eliminates the danger of sending a patient to the operating table with barium still in the bowel. There is nothing more dangerous to the patient and, incidentally,

*Mayo Lecture, University of Michigan Medical School, Ann Arbor, Michigan, April 27, 1934.

†Charles W. Mayo received M.D. from University of Pennsylvania in 1926, M.S. in Surgery from the University of Minnesota in 1931. He is Head of the Section in Division of Surgery, The Mayo Clinic; Instructor in Surgery, The Mayo Foundation for Medical Education and Research, Graduate School, University of Minnesota, and a Fellow of the American College of Surgeons.

more annoying to the surgeon than an improperly cleansed bowel.

Administration of a proper diet maintains whatever advantage has been gained by medical cleansing of the bowel and, in addition, builds up the patient from a nutritional standpoint to tolerate the shock of operation. The diet is of a type of which the residue is minimal, and consists of a basic allowance of 2,000 calories of carbohydrate, including principally fruit juices and candy. To this, for those who tolerate such a diet, is added 50 per cent more carbohydrate, making a total of 3,000 calories daily. It has been found that a patient at ordinary rest will gain weight on this diet, and that the bowel will remain comparatively empty. The threshold for carbohydrate is watched for by making determinations for sugar in the urine and blood, although sugar is seldom found in the urine, and the rise in blood sugar is usually within normal limits. Adequate dietary variations can be made in those cases in which they are found necessary.

I should like to consider more fully the question of intraperitoneal administration of vaccine as a measure of precaution against peritonitis. This measure has been used at The Mayo Clinic in approximately 1,500 cases, and much has been learned concerning its value. It is of definite protective and clinical significance. The vaccine is produced from a mixture of streptococci and colon bacilli obtained from patients who have died of peritonitis. It is introduced into the peritoneal cavity seventy-two hours before contemplated operation, because it has been found that the optimal effect can be expected after this length of time. Dixon and Rixford, in their work relative to the cytologic response to vaccine administered to man, found that the average total cell count of the peritoneal fluid of those patients who had been vaccinated was 44,300, nearly fourteen times the average count of all patients who had not been vaccinated. Experimentally, the greatest protection is afforded when the number of histiocytes is high, and this happens to be between forty-eight and seventy-two hours after injection of the vaccine; the vaccine seems to stimulate the phagocytosing mechanism of the peritoneal cavity. The dose of vaccine is between 0.5 and 1 c.c., or between 500,000,000 and 1,000,000,000 organisms. The injection is carried out under sterile precautions with a dulled needle. The site of the injection is usually on the side opposite to that on which the surgical procedure is to be carried out.

By close observation of the temperature following injection of the vaccine, Bargen and Trenouth found that it was possible to make certain predictions relative to the type of growth which will be found at operation. When metastasis, perforation or inflammation had not occurred, there was just a slight drop in temperature, chilly sensations, or a real chill, more or less severe cramps, and a sharp rise in temperature to between 100° and 104° F., with an abrupt fall to normal in about ten and a half hours. Thereafter the temperature remained normal. Irregularities from this so-called normal, such as continued elevation of temperature over a period of two or three days, indicate usually that complicating features will be found at operation, usually in the form of a perforating lesion, metastasis, or an inflammatory condition. The severity of complications is in direct proportion to the fluctuations in temperature.

Before leaving the question of intraperitoneal injection of vaccine, I should like to make clear one point. It will not prevent peritonitis, nor will it be of any benefit when gross soiling has taken place. The principal benefit lies in a small, middle group of cases in which the scale is tipped against death by the timely mobilization of protective forces.

In the last day before operation, two other noteworthy routine measures are employed to insure a clean and quiet bowel; namely, aspiration of the colon by means of a syringe and administration of camphorated tincture of opium in three doses, respectively of 1, 1, and 2 drachms (4, 4 and 8 c.c.) at 2, 6, and 10 p. m., if operation is to be performed in the morning. The camphorated tincture of opium, in addition, tends to give the patient a quiet and restful night before operation.

Close observation while the usual period of three to five days of preparation is in progress, enables the surgeon to estimate the surgical risk with a fair degree of accuracy, although nothing can take the place of long experience and, even then, the surgeon may be compelled to take a vacation after the operation to readjust himself to the human factor of error. Age, sex, duration of symptoms, the pathologic grade of the lesion,

when it has been possible to determine it during the course of proctoscopic examination, obesity, anemia, and, not least, the mental attitude of the patient, are among the many factors which enter into the picture and which determine the risk involved.

OPERATIVE FACTORS

The diagnosis has been made, the patient has been prepared for operation, and now he comes for operation. Let us consider at this point some of the operative factors which contribute to safety. Generally speaking, these factors may be divided into two groups: those of surgical judgment and those of surgical technic. Of the two, the first is by far the more important; if judgment is good, at least it involves knowledge of when to stop. The surgeon who undertakes the operative procedure must be continually mindful of his purposes; namely, that the patient survive and live in comparative comfort, and next that the growth be radically removed whenever possible. When the patient is on the operating table and the abdomen is opened, usually the surgeon has two additional aids besides his preoperative observations: direct touch, and visualization of the growth. Consequently, at this time is decided whether the operation shall be exploratory, palliative, a radical procedure in one stage, or a procedure in multiple stages, with the eventual object of complete removal of the neoplasm. Often the decision is not difficult, but occasionally a seemingly small thing will influence one in a debatable case, and time alone gives proof of the wisdom of that judgment. The surgeon should beware of too marked enthusiasm for a particular type of surgical procedure; there is too great a temptation to make the case fit the operation, rather than to make the operation fit the case. Each case must be dealt with as an individual affair and the mind of the surgeon must be flexible to recognize the proper procedure or combination of procedures and to adapt them to the case in hand, as the findings merit. The main points to be considered in selecting the proper operation for the individual patient are: (1) the situation of the growth; (2) presence or absence of local fixation; (3) presence or absence of distant metastasis; (4) age of the patient; (5) the general condition of the patient on the operating table, and (6) the grade of malignancy, when it has been possible to determine it preoperatively.

Although it is not always possible to have at hand a wide range of anesthetic agents, selection of an efficient one aids materially, from a technical standpoint. At The Mayo Clinic, in operating on the colon, spinal anesthesia usually is employed, and generally the agent is procaine, supplemented, if necessary, by nitrous oxide. However, when properly administered, it is difficult to excel anesthesia by inhalation, using nitrous oxide or ethylene for induction, and ether for maintenance. As with most variables in surgery, it is unwise to have a fixed routine in anesthesia; it is far preferable to individualize the patient and give the type of anesthetic that fits the particular patient involved.

Rather than discuss the technic of the different possible operations on the colon, I believe it more valuable to consider the underlying principles involved, which depend on physiology, pathology and anatomy. Technical maneuvers vary in detail with each surgeon, while the general principles are equally applicable to any type of surgical attack on the colon.

Obstruction in one of its forms, acute, subacute, or chronic, is the rule rather than the exception when a patient with carcinoma of the colon presents himself to the surgeon. Unless it has been possible to relieve the acute obstruction by medical means, surgical decompression of the bowel is in order; this usually is best accomplished by cecostomy, which not infrequently is a life-saving measure when it is impossible, under the circumstances, to determine the true site of the lesion. If the portion of the cecum which is brought out of the abdomen is walled off by vaseline gauze, it may be punctured in six or eight hours, and the restored patient, given adequate observation, later can undergo an operation directed toward cure of the condition.

In the presence of subacute obstruction, particularly if patients are older and debilitated, cecostomy again is of advantage as a safety valve, materially reducing the risk of further operation. If there is no such opening, marked dilatation of the bowel may develop, due to paralysis of the intestinal musculature following operations which temporarily obstruct still further an already overtaxed intestine.

The original, so-called obstructive resection, or modified Mikulicz operation, did not provide a safety valve, but it has subse-

quently been found that when it is possible to exteriorize and remove a carcinoma of the colon by such an operation, it is of material advantage to provide a safety valve, before the operation or at the same time as the operation, by cecostomy, appendicostomy, or by placing a catheter in the proximal loop of bowel, near the clamp, and above the peritoneum. When this is done, one need not worry about loosening the clamp on the upper loop of intestine but may patiently wait until both upper and lower clamps drop off spontaneously.

In the presence both of acute and subacute obstructions, especially the former, one must be very careful in handling the bowel. An intestine, in the presence of such a condition, can be likened to a tent without a fly in a rainstorm; it leaks wherever touched, and peritonitis and death result from touching it. When chronic obstruction exists, one finds a thick-walled bowel above the growth, due to the effort of the colon to overcome the difficulty, not yet insurmountable, of forcing the waste material beyond the obstruction. Such an hypertrophied bowel must be handled carefully, but it is not as vulnerable as the intestine in acute and subacute types of obstruction. It must be remembered that when chronic obstruction exists, a subacute or an acute condition may be imminent.

In surgery of the colon, the blood supply must be carefully considered. Emphasis always has been placed on the paucity of blood supply to the large bowel, and the importance of maintaining adequate circulation in any surgical procedure on this portion of the intestinal tract frequently has been stressed. Failure to achieve success not infrequently has been traceable to the lack of appreciation that the branches that supply the large intestine are not standardized, as many textbooks would cause us to believe that they are. Steward emphasized this point. A simple rule that may obviate trouble in this regard is closely to observe the small arteries and the color of the bowel, both proximal to, and distal to, applied clamps. Occasionally it may be necessary to resect a larger portion of bowel than originally was intended. It is especially difficult, in the abdomen of an obese person, to be certain of the circulation, but great caution always is indicated.

In speaking about surgery of any part of the body, perhaps one should not be too emphatic about "do's" and "don't's," because occasionally a "don't" seems to be justifiably transformed into a "do." However, it is rare that end-to-end anastomosis of the colon can be safely accomplished. The transverse colon and the rectum may, on occasion, suitably lend themselves to such a procedure, but rarely does the descending colon or the sigmoid. In the peritoneal cavity, when anastomosis of colon to colon, or of small bowel to colon, is indicated, it is well to take advantage of epiploic tags and omentum to protect the line of suture.

When dealing with carcinoma of the right portion of the colon, there is a certain advantage which must be considered. Malignant growths in this region are slower to metastasize than those of any other part of the large bowel. Its "filter-system" seems to be almost impregnable to substances other than liquids. Resection here is carried out in one or two stages. The two-stage procedure, for a majority of cases, is perhaps the safer. When this type of procedure is chosen, preliminary side-to-side or end-to-side ileocolostomy is performed, and a few weeks later, when conditions warrant, resection is carried out with comparative ease. Particularly is this suitable when, on original examination, the growth is found to be fixed. After diverting the intestinal stream, much of the fixation of the growth disappears, due to lessening of inflammation, and the opportunity of the part for rest. This is also true in other parts of the colon, where one finds a growth which on first examination feels and appears inoperable. Colostomy, to divert the intestinal content, rest, deep roentgen therapy and, when possible, radium; these, happily combined, not infrequently will reduce and loosen a growth to a point at which radical removal is not only possible but curative.

The question of drainage in operations on the colon usually can be easily determined. The same principles apply here as in operations in other regions. When large pockets are left, even after complete peritonization, as in resections of the right portion of the colon, it is wise to insert a small, soft rubber tube to allow subsequent serous collections to be discharged. Also, when there has been unavoidable contamination, it is well to drain the region. In women, vaginal drainage frequently can be used to advan-

tage. Collections of toxic materials frequently can be prevented by adequate and properly inserted drains.

Before going on to the postoperative factors of surgical importance, I should like to indicate a last cardinal surgical principle; namely, accurate peritonization of all raw surfaces. It makes little difference in what portion of the colon resection has been carried out; the covering of raw surfaces in this manner prevents adhesions and conduces to rapid and safe healing.

POSTOPERATIVE FACTORS

The postoperative care of the patient who has undergone an operation on the colon is an essential third of this subject. As a group, these patients have a more disturbed postoperative course than those on whom more usual abdominal operations are performed, and so more careful supervision is required to obtain satisfactory results.

Those patients who have been given spinal anesthetics are kept flat in bed until they are able to move their feet freely. After this, they may be placed in the position which best serves dependent drainage, if such be indicated, and which, at the same time, satisfies the natural desire for comfort. Both physical and mental rest are of great importance in any convalescence, and particularly in cases of the sort under consideration should they be emphasized. Liberal allowances of morphine, to induce intestinal quiet and to relieve pain, are given for at least the first forty-eight hours. Fluids are not given by mouth, at least for this period, and preferably not until gas is passed, either through the natural or through the artificial vent. Necessary fluids are given subcutaneously or intravenously. Those who are not familiar with the continuous drip, which may be used with either method of administration, should familiarize themselves with it. By this method, if indicated, fluid can be administered uninterruptedly, for several days; the daily intake can be regulated as is required in the individual case, and there is not the discomfort pursuant to periodic introduction of needles.

There are certain dangers, and consequently precautions, to take when administering fluids intravenously. One hour should be taken to give 1 liter of saline solution, and two hours to give a similar amount of solution of glucose, and even then administration should be under the supervision of a physician. One must be especially watchful for unfavorable reactions if patients are aged, obese or short-necked, and in the presence of hypertension, arteriosclerosis, a weakened myocardium, or considerable infection. If there has been, or is, evidence of thrombosis, phlebitis, or pulmonary infarcts, solutions should not be given intravenously. The ideal solutions, when indicated, have been found to be physiologic saline, 5 or 10 per cent glucose, and 5 per cent glucose in physiologic saline.

Once operation has been decided on, it is wise to determine the blood group of the patient. Transfusion, once or more than once, may play an important part in the postoperative course. Its timely use frequently reinforces resistance and makes the difference between life and death.

Ileus is a serious complication of colonic surgery. It is amenable to treatment in direct proportion to the seriousness of the cause, whether the ileus is of paralytic type, caused by shock or peritonitis, or whether its cause is mechanical. Hot stupes, pituitary extract, physostigmine or, at times, acetylcholine may be used to advantage in this condition. A small spinal injection of procaine, because of its preliminary active stimulatory effect on the bowel, may be of benefit in occasional cases. Enterostomy, when other less drastic measures have failed, serves a useful purpose to decompress a bowel, but it is resorted to too late to be of assistance in most instances. In the late stages, it has no more effect than a coup-de-grace, and this has no place in medicine or surgery.

Patients are prone to develop parotitis following operations on the large bowel. The etiologic factor or factors are not known. As a precaution against it, gum may be chewed, off and on, as soon as possible after operation. The most efficient treatment for such a complication is application of radium in doses sufficient to produce the desired result. Radium, supplemented by application of heat or cold, will, in the majority of instances, prevent development of suppuration.

Other complications may be encountered to make miserable the life of the patient and of those attending him. Whether they be pulmonary, cardiac, urinary, or infectious involvement of the wound, they are treated

much the same as when they occur following any other type of surgical procedure. One must be prepared for anything, and to get the optimal results one should institute proper treatment early.

I do not labor under the illusion that I have covered all of the important points in surgery of the colon, nor do I feel that justice has been done to those touched on in this discussion. However, one interested in surgery finds it advisable occasionally to review what may already be well ingrained, and such fundamentals to surgical success as adequate preoperative preparation, application of and attention to surgical details, and close observation of and prompt attention to postoperative complications are the only means, other than early diagnosis, by which one can hope to hold out a favorable prognosis in cases of carcinoma of the colon.

EXCRETORY UROGRAPHY

JOHN B. JACKSON, M.D.†
KALAMAZOO, MICHIGAN

Since the introduction of a practical clinical method of urography by the intravenous use of uroselectan in 1929 by Von Lichtenberg and Swick,[2] much has been written about this method of study of the urinary tract. Almost every month one finds additions to the literature of so-called excretory urography. To this literature we can hope to add nothing original. However, we have been asked to review our experience in this field and to point out the value of this diagnostic procedure and its limitations.

In the beginning of this work we used the uroselectan powder, which had to be dissolved and sterilized and made into a solution of a volume of about 100 c.c. This took time and care and was more unpleasant for the patient than the present solution of a volume of 20 c.c.

We have seen only one serious reaction to this drug and this was in one of our early cases in which there was a technical error in the preparation of the solution. The patient went into a state of syncope when about one-fourth of the preparation had been given. The administration of the drug was discontinued. The patient was revived and suffered no further effects of the drug. However, patients quite generally complain of pain along the course of the vein while the drug is being administered and this appears to be the case without regard to the time taken for the injection. We have had the misfortune a few times to "spill" small amounts of the drug outside the vein, but have never seen any serious injury to the tissues from this accident. So far as we know, there have been no thrombosed veins.

It is our observation that the amount of the drug should be varied according to the weight of the patient. Very heavy, large patients should have more than 20 c.c., while very small adults and young children may have less.

Our series of cases numbers 111, seen in office and hospital diagnostic x-ray examinations. These patients were referred for the most part by men in general practice and on account of some one or more symptoms referable to the urinary tract. Some were referred for general x-ray examination in the course of which it was necessary to eliminate the urinary tract as a possible cause of symptoms not especially characteristic of urinary tract disease and a few were examined by this method as a way of making a differential diagnosis of abdominal tumors.

One of the first questions that came up in this work was the value of this method in determining renal function. We have studied our series of cases with especial attention to this feature and have come to the conclusion that the prompt appearance of the drug in the renal pelvis is quite comparable to the appearance time of indigo-carmine or phenol-sulphone-phthalein as a method of estimating the renal function. In this series of cases were a considerable number who either before or after this procedure had functional tests made at cystoscopy and in all of these the function indicated by excretory urography was corroborated by either the indigo carmine or phenol-sulphone-

†Dr. John B. Jackson received his A.B. at Kalamazoo College in 1898; M.D., Rush Medical School in 1903. He is Chief of Staff, Burison Methodist Hospital, Kalamazoo, Michigan. He is past president of the Michigan State Medical Society.

phthalein tests. Where good excretion is seen on the first film after five or ten minutes one may feel reasonably sure that the function is normal. Where the excretion is absent or much delayed other tests have given like results.

In this connection might be mentioned a case of ureteral block from a stone in the upper ureter. On the flat plate the stone shadow was shown on the right side. Twenty c.c. of Neo-Iopax were given intravenously. A normal left kidney pelvis was shown in ten minutes, but after two hours there was no visualization of the right pelvis. The surgeon was unwilling to attempt the removal of the stone on this evidence and the patient was sent back the following day for cystoscopic study. A preliminary film made after the passage of the right catheter showed a much dilated right pelvis filled with the Neo-Iopex. This was twenty-four hours after the administration of the drug. This and similar experience in other cases with a blocked ureter with much delayed excretion of the drug brings up the question of what light this may possibly throw on the physiology of the kidney. Is there some fixation of the drug in the kidney? Why is not the drug entirely excreted by the normal kidney? That there is some fixation of the drug in the kidney is suggested by the common observation that the kidney itself as well as the kidney pelvis is much better visualized on the x-ray film after administration of the drug.

Probably the most useful field for the employment of this test is in localizing suspected stone shadows. Unless the function of the kidney is so far interfered with as to prevent completely the excretion of the dye one can in the majority of cases localize the stone shadow accurately. One can say whether the stone is in the parenchyma or pelvis of the kidney, in the ureter or bladder or entirely outside the urinary tract. One can also draw conclusions as to the amount of kidney damage and the size of the pelvis. In cases where there is some blocking of the ureter by stone the x-ray demonstration is particularly satisfactory provided there is any secretion of the dye on the affected side. Many cases are referred for x-ray examination where shadows are found on the preliminary plate and there is a question as to whether they represent phleboliths, calcified glands or true urinary calculi. It is certainly much more simple to eliminate such questionable shadows by this method than to subject the patient to a cystoscopic examination. In this connection it should be stated that the portrayal of ureteral shadows by this method is not always satisfactory. It is sometimes desirable to have a considerable number of films in order to get a satisfactory demonstration of the ureters. Different portions of the ureter may be shown on the different films and by taking a composite of all the entire ureter may be made out. We have tried compression as a method of filling the ureter without much success. Elevation of the foot of the table to a moderate degree seems to be of some help in showing the ureters on the x-ray film. Films made with the patient in the erect position quite uniformly fail to show the ureter unless it is blocked.

Dilatation of the kidney pelves from imperfect drainage or infection or both as usually is the case, can as a rule be well shown by this method. The cases in which this is not true are those in which kidney damage has gone on to such an extent that there is not sufficient function to result in the excretion of the dye. One apparently gets a more accurate idea of the size of the pelvis by this method than by retrograde pyelograms. There is no possibility of exaggerating the lesion by over-distention as may be the case in retrograde pyelography. This method of study of the kidney has made possible the demonstration of the effects of pregnancy on the kidney pelvis without putting such patients to the inconvenience of cystoscopy and retrograde filling. Kretschmer[1] and others have demonstrated rather uniform dilatation of one or both pelves during pregnancy.

We have found this method of value in differentiating upper abdominal tumors. We have been able in some cases to make a definite diagnosis of renal tumor and in several cases to exclude the kidney as the site of the tumor. In this series of cases was one large sarcoma of the stomach and one leiomyoma of the stomach in which normal pyelograms were a great help in differentiation. In a few cases the method has been of value in differentiating a splenic tumor from a kidney. Theoretically this should be easily done by physical examination. Practically one not infrequently sees cases in which it is difficult to say whether the tumor mass is spleen or kidney. We had one case referred to us on account of hematuria and a left

upper abdominal tumor which proved to be leukemia. While a preliminary blood count would have been the best diagnostic procedure, the demonstration of a normal left pelvis was much simpler by excretory urography than by cystoscopy. Another case of hematuria and upper left abdominal tumor proved to be a hypernephroma quite conclusively shown by excretory urography. Another case with gastro-intestinal symptoms and an upper left abdominal tumor showed a characteristic kidney tumor pyelogram. It would seem that the method has a rather wide field of usefulness in tumor cases.

In renal tuberculosis we have had a rather limited experience. In one case with calcification and no function and with tuberculosis of the epididymis, we made a diagnosis of an auto-nephrectomy. Where there is an extensive tuberculous lesion with some function left the diagnosis can usually be made by this procedure. Where smaller lesions are present it is often difficult to be sure whether the defect is due to imperfect filling of the pelvis or to tuberculosis. In such cases the retrograde pyelogram would seem to give safer grounds for drawing conclusions.

This method would seem to be the method of choice for demonstrating kidney ptosis whether associated with dilatation of the pelvis or not. One can get a very accurate idea of the range of kidney mobility by making first films with the patient supine, the foot of the table elevated and during expiration and then making films with the patient erect in inspiration. The kidney pelves are, as a rule, not well filled in the erect position but enough of the outline can be made out to localize the kidney. In the erect position we have thought that at times lower abdominal compression was of some use. The increased density of the kidney itself even where the pelvis has entirely emptied makes it possible to estimate the change of position of the kidney with change of posture.

In the case of double ureters or double pelves excretory urography is a method of checking possible oversight of such anomalies at the time of cystoscopy. I suppose that urologists seldom need such a check, but as a roentgenologist who a great many years ago before the local advent of the urologist took up cystoscopy as a means of helping out in making diagnosis of cases referred for x-ray study, I fear that I have overlooked many such anomalies.

Excretory urography should be of great value in injury cases where there is a question of rupture of the kidney, bladder or urethra. Our experience in this class of cases has been very limited. In the few cases where it has been used it has been of distinct diagnostic value. It would seem that if surgeons who see a large number of accident cases understood the value of this procedure the roentgenologist would be called on oftener for the study of suspected urinary tract injury by this method.

In prostate hypertrophy or other types of bladder-neck obstruction this method gives much information. One gets a very good idea of the amount of back pressure in the ureters and kidney pelves and, as we have already mentioned, a fairly good notion of the amount of impairment of kidney function. In cases where obstruction has resulted in diverticula it gives a satisfactory method for study of these conditions. It is also of definite value in showing residual urine after the patient has emptied the bladder as completely as possible. In this connection we may add that we have a few times shown unsuspected bladder tumors by excretory urography. It is our opinion that the best way of demonstrating bladder tumors roentgenologically is by the old method of pneumocystograms but we have a few times diagnosed bladder tumors in the cases of a routine intravenous study.

Another field of usefulness for this method is in cases for differential diagnosis where there is not much suspicion of the urinary tract, but where one feels that it is important to make some effort to eliminate urinary tract disease. In other words, in cases where there is no urinary tract disease. Quite obviously many such cases will not be subjected to cystoscopy and retrograde pyelography. We have used this in many such cases, especially in pelvic disease in females and have found it especially helpful.

It is unnecessary to state that this method has a wide field of usefulness in cases where for one reason or another cystoscopy is impossible or unsatisfactory: in urethral stricture or obstruction from any other cause; in young children; or in acute urinary tract inflammation; or in cases of profuse hemorrhage. It occasionally happens even in the hands of experts that ureteral catheterization fails and for this reason retrograde pye-

lography is impossible. Many patients with irritable bladders will refuse a second cystoscopy and in such cases excretory urography may be a useful substitute.

In the beginning of this work there was, a feeling on the part of urologists that this method of study of the urinary tract was an intrusion on the field of urology and that it was necessary to defend retrograde pyelography by cystoscopy against this intrusion. Apparently this feeling has now entirely disappeared. The enthusiast for the method has found that many cases studied by this method still require cystoscopy and the urologist has found it a distinct addition to his diagnostic procedures. In urology as in every other field of medicine one must welcome anything that makes us better able to know and understand disease processes.

We have spoken to some extent of the advantages of this method of diagnosis. Let us briefly speak of its disadvantages. In the first place one must recognize that the mine run of pyelograms made by this method is far inferior to that secured by retrograde filling. One may get a good percentage of entirely satisfactory pyelograms but not in anywhere near the percentaage that one gets in carefully made retrograde pyelograms. Filling is likely to be imperfect or faint and small lesions may be overlooked. Ureters, as a rule, are not well shown unless they are obstructed. Of course the accurate localization of the source of hematuria or pyuria is many times in doubt without cystoscopy. In the case of bladder lesions there can be no comparison of the information secured by direct inspection of the bladder and that obtained by cystography.

To recapitulate, may we say that excretory urography (1) often gives us a fairly accurate idea of kidney function; (2) is an accurate method for localizing urinary calculi; (3) shows gross changes in the pelves and ureters; (4) is of great value in differentiating upper abdominal tumors; (5) will show many advanced cases of renal tuberculosis; (6) is an accurate method of demonstrating ptosis; (7) shows many anomalies easily overlooked by cystoscopy; (8) is of great value in studying suspected cases of urinary tract injury; (9) is of definite value in bladder-neck obstruction cases; (10) has perhaps its greatest field of usefulness in demonstrating normal urinary tracts. It is not a substitute for cystoscopy. It would seem that, in addition to being a valuable aid to the urologist, it has a definite place in diagnosis in more general fields of medicine and surgery.

REFERENCES

1. Kretschmer, Herman L.: Jour. A. M. A., 101:1933 (Dec. 23), No. 26.
2. Swick, M.: Amer. Jour. Surg., 8:405 (Feb.), 1930.

THE FLUORIDES AS AN AID TO IODINE IN HYPERTHYROIDISM*

WILLIAM S. REVENO, M.D.†
DETROIT, MICHIGAN

Despite the beneficial effects following its administration in hyperthyroidism, iodine has certain limitations to its usefulness which markedly reduce its therapeutic value. Among these may be listed its temporary effect, the possibility of aggravating the hyperthyroid state or producing "iodine-fastness" through prolonged administration, and variations in response ranging all the way from complete ablation of all of the symptoms to absolute refractoriness to the chemical.

It would appear that removal of these limitations might enhance the effect of iodine in hyperthyroidism and produce more consistent and perhaps more lasting results from its administration, and it is with this effort that the work here reported has concerned itself.

A method for increasing the absorption, utilization and storage of iodine is suggested by the manner in which this agent is taken up by the iodine-deficient hyperplastic gland in simple goiter. Here the deficiency hyper-

*From the Highland Park General Hospital. Read before the Wayne County Medical Society, March 12, 1934.

†Dr. Reveno holds the degree of Ph.C., B.S., University of Michigan, 1917; M.D., Wayne University, 1921. Head of Medical Department, Highland Park General Hospital, Highland Park, Michigan.

plasia is promptly arrested by iodine, and the functioning tissue is thrown into the resting stage. If it were possible to create in the hyperactive thyroid gland a widespread iodine-deficiency similar to that which exists in simple goiter, the administration of iodine should then be followed by an arrest of the hyperplasia, and conversion of the gland to the resting stage. To produce this iodine-deficiency it would be necessary to prevent iodine reaching the thyroid gland so that it could neither enter into chemical combination nor be stored there.

The employment of fluorine and its salts for this purpose seems logical both from the chemical standpoint and from the results following its clinical use in hyperthyroidism as reported by Goldemberg,[1] and Gorlitzer.[2] Goldemberg has used the fluorides both orally and intravenously with a degree of success that compares very favorably with any of the medical methods for managing hyperthyroidism. He has not, however, followed their use with the administration of iodine, a procedure which, on theoretical grounds at least, should be productive of more uniform and improved results. It was to test out this idea that the alternate use of fluorides and iodides was started.

Five patients with hyperthyroidism, all of whom had shown little or no response to iodine, were subjected to this method of treatment. Two of these, patients 1 and 3, were given fluorides over a long period of time, then iodides for a shorter period. The other three patients were given one or more courses consisting of four weeks of fluorides followed by one to two weeks of iodides, the course being repeated when the symptoms persisted and the basal metabolism remained elevated. The latter method was preferred because it offered the opportunity of fixing with iodine each gain made with the use of the fluorides. It held the advantage of shortening the period of treatment, particularly for the patient with a mild degree of hyperthyroidism, and of being applicable to iodine-resistant patients, and to those with unusually high rates of metabolism in whom thyroidectomy was contemplated.

In both methods a two per cent aqueous solution of sodium fluoride was administered in divided doses in quantities ranging from eighty to two hundred drops per day. The dosage was increased to the highest point as rapidly as the patient's tolerance would permit. This was followed at the end of four weeks, with Lugol's solution or saturated solution of potassium iodide in divided daily doses of fifteen drops.

Due regard was had for the toxicity of the fluorides as well as their influence on calcium metabolism. Pregnancy and incomplete dentition were considered contraindications to their use. The chemical was in general well tolerated, the only difficulty encountered being nausea and occasional vomiting during the first week. Occasionally the full daily dose of two hundred drops could not be taken, and the quantity had to be reduced.

All of the patients reported here were ambulatory attendants at the outpatient department of the hospital. They were seen once each week, when the general condition was determined. As soon as a basal metabolism of +15 per cent or less was reached, and most of the symptoms had subsided, all medication was discontinued. Visits were then made at monthly intervals, when the general physical condition was determined and a basal rate estimation made if thought necessary.

Case 1.—A patient with exophthalmic goiter unsuccessfully treated with bed rest, sedatives, physostigmine, quinine, Lugol's solution and x-ray. Prolonged fluoride administration caused a slow reduction of the basal metabolism and amelioration of the symptoms. This was followed by administration of Lugol's solution for one month, after which all of the symptoms cleared up and the basal metabolism returned to normal. Observation of the patient for twelve months has shown no recurrence.

J. A., aged sixteen, was a well-developed young adult male whose skin was flushed and moist, who showed, in addition to a mild restlessness, a marked bilateral exophthalmus, a smooth bilateral enlargement of the thyroid with visible pulsation in the neck, and a fine tremor of the hands. He had been suffering from nervousness, weakness, palpitation, swelling of the neck and bulging of the eyes since June, 1930.

From December 16, 1931, to January 30, 1932, he had been hospitalized and had been treated by bed rest, sedatives, physostigmine, quinine and Lugol's solution with no perceptible improvement in his general condition. His basal metabolism on admission was +69 per cent. Two weeks later it was +56 per cent and on January 12, 1932, it was 68 per cent. His blood pressure averaged 166 systolic and 90 diastolic, while his pulse rate was 120. An x-ray treatment was given January 20, 1932, and March 24, 1932. On April 1, 1932, his basal metabolism was +58 per cent.

He was not seen again until May 25, 1932, when he presented essentially the same picture as he had six months previously. His weight was 135.5 pounds.

Sodium fluoride was started in small doses that were increased very slowly. It was not until December 10 that the patient was taking a full dose of 200 drops of the 2 per cent solution. Fluorides were continued until December 24, 1932, a period of seven months during which he took approximately

1,500 c.c. of 2 per cent solution, or over 30 grams of sodium fluoride, with no demonstrable ill effects.

By August 3, 1932, there was no tremor noted and the exophthalmus and thyroid enlargement had diminished gradually. The weight increased slowly to 141½ pounds.

During the fluoride regime his pulse rate varied between 84 and 132 and his blood pressure readings ranged from 142 to 180 systolic and 60 to 94 diastolic. The pulse pressure remained above 50.

On July 25, after two months treatment, his basal rate was +47 per cent. On September 1 it was +48 per cent. On December 12 it was +36 per cent.

On December 24 fluorides were discontinued and Lugol's solution, fifteen drops daily, given till January 27, 1933. No treatment was given after this date. On January 25, 1933, the basal metabolism was +18 per cent. The pulse rate 72, blood pressure 140/80, and the weight 143 pounds. There was no nervousness or tremor, the exophthalmus had completely receded and the thyroid was barely palpable. He felt well enough to return to school.

February 25, 1933: His general condition continued good.

March 25: The weight was 141.5 pounds; the pulse rate 98, blood pressure 160/70 and the basal rate +19 per cent.

April 22: Weight 142.5 pounds, pulse rate, 72, blood pressure 130/80, basal rate +22 per cent.

May 20: Weight 139.5 pounds, pulse rate 96, blood pressure 126/70, basal rate +12 per cent.

June 19: Basal rate +16 per cent.

August 18: Weight 137 pounds, pulse rate 72, blood pressure 110/74, basal rate +11 per cent.

October 18: Basal rate +5 per cent.

November 22: Basal rate 0; no evidence of thyroid hyperactivity could be found.

Case 2.—A patient with mild hyperthyroidism of short duration. Temporary response to six weeks of Lugol's solution. Recurrence of symptoms, then their complete disappearance following four weeks of fluorides and two weeks of minute daily doses of iodides.

No recurrence after eleven months observation.

A. S., white male, aged sixteen, was first seen December 16, 1932. He had been suffering from nervousness, frequent attacks of nausea, and abdominal cramps since August, 1932, and had undergone a weight loss of 33 pounds (from 212 to 179 pounds) during the first month of his illness.

His treatment from mid-September on consisted of sedatives administered constantly, and approximately 22 minims Lugol's solution daily for two weeks followed by a four weeks' rest period. In all, three courses of Lugol's solution had been given.

His irritability and nervousness, together with occasional attacks of diarrhea, tremor, excessive perspiration, palpitation and dyspnea on exertion, had continued to the time of his first visit. Examination showed a restless, somewhat irritable young man whose weight was 191 pounds and height 5 feet 10¾ inches. The blood pressure was 124/70, the pulse rate varied from 72 to 96. There were no positive eye signs; there was a tremor of the hands and fingers; the left lobe of the thyroid showed a smooth enlargement. The basal metabolic rate was +26 per cent.

A daily dose of thirty drops of 2 per cent sodium fluoride was started December 17, 1932. This was increased to forty-five drops on December 23. On December 30 his weight was 195 pounds, the blood pressure was 128/78, and the pulse rate 90. Three days previously he had an attack of abdominal cramps with diarrhea. He complained of feeling tired all the time. Fluorides were increased to seventy-five drops daily.

On January 6, 1933, the weight was 194 pounds, blood pressure 128/80, pulse 84. He was feeling much better. Tremor absent. Irritability and nervousness diminished. Fluorides increased to ninety drops daily.

January 13: Weight 194 pounds, blood pressure 136/64, pulse 96. Nervousness and restlessness improved. Fluorides were discontinued and a daily dose of 15 mgm. iodine administered for two weeks.

January 20: Weight 191 pounds, blood pressure 124/80, pulse 84. General condition good. The basal metabolic rate at this time was +3 per cent.

He was next seen in August, 1933. His weight was 178 pounds, blood pressure 110/60, pulse 80. He looked healthy despite his loss in weight and was well proportioned for his height. There was no thyroid enlargement, no tremor, palpitation or excessive perspiration. The basal metabolic rate was +12 per cent.

In September, 1933, his weight was 178 pounds, blood pressure 124/68, pulse rate 84. No evidence of hyperthyroidism could be found.

Case 3.—A patient with toxic adenoma who had experienced some temporary relief by taking tincture of iodine in drop doses. Administration of fluorides (39 grams) over a six months period produced relief from most of the subjective symptoms and resulted in a decrease in the size of the thyroid gland. The basal metabolism remained elevated. Lugol's solution for four weeks was followed by a reduction in the basal metabolic rate to normal and a complete return of the thyroid to normal size.

There has been no recurrence of symptoms after twelve months observation.

M. K., white, female, aged forty-one, was first seen June 9, 1932. She complained of nervousness and palpitation which had started eight years previously, and a swelling of the neck which was first noticed seven years ago. Tremor, palpitation, nervousness and dyspnea on exertion had gradually increased and she had lost eight pounds in the last year. During the past year, the patient had obtained some temporary relief by taking tincture of iodine at intervals.

The patient had been married eighteen years, and had had four normal pregnancies. Sixteen years ago nephrectomy was performed for tuberculosis of the right kidney.

Examination showed an undernourished, markedly nervous white adult female. The skin was flushed and moist. Slight exophthalmus and lid lag were present and there was a marked tremor. The thyroid showed a firm nodular enlargement throughout both lobes. The pulse was 104, the blood pressure 178/84, the weight 116 pounds and the basal metabolic rate +43 per cent.

June 13, 1932, she was started on sixty drops of 2 per cent sodium fluoride daily. The dosage was gradually increased and by July 14, 1932, it had reached 140 drops daily.

July 18, 1932, the basal metabolic rate was +20 per cent. The only improvement noted was a diminution in the tremor and nervousness.

By October 14, 1932, the dosage of fluorides had been increased to 200 drops daily and the improvement continued slowly.

On October 29, 1932, the weight was 116 pounds, blood pressure 170/80, pulse rate 80. There was no tremor, exophthalmus or lag-ophthalmus. Thyroid enlargement somewhat reduced. Fluorides continued.

November 2, 1932: Basal metabolic rate +26 per cent.

December 20, 1932: Basal metabolic rate +40 per cent.

December 24, 1932: Weight 113 pounds, blood pressure 130/80, pulse 84. Thyroid enlargement barely palpable; no stare or exophthalmus noted. Sodium fluoride discontinued. Approximately 1950

c.c. of 2 per cent solution had been taken in six months (about 39 grams of sodium fluoride).

Fifteen drops of Lugol's solution daily was started and continued for four weeks. At the end of this time the weight had increased to 118.5 pounds. The blood pressure was 146/88, the pulse rate 88, and the general improvement marked.

January 25, 1933, the basal rate was +5 per cent. The tremor, eye signs and thyroid enlargement were no longer present.

She was seen at monthly intervals until November 1933, and showed no recurrence of her hyperthyroidism.

In April the basal rate was +15 per cent.
In May it was +2 per cent.
In June it was +3 per cent.
In September it was +5 per cent.

On October 18, 1933, the weight was 120.5 pounds, blood pressure 130/90, pulse 84, basal rate +3 per cent. There was no evidence of hyperthyroidism and the patient was in excellent physical condition.

Case 4.—A patient with a toxic adenoma, unimproved by prolonged administration of Lugol's solution. Two courses of fluorides and iodides were given. At the end of the first the basal rate was reduced from +49 per cent to +30 per cent. By the end of the second the rate was +1 per cent and all evidence of toxicity had disappeared.

L.B., white, male, aged forty-one, was first seen in the clinic on January 6, 1933. He suffered from nervousness, insomnia, excessive palpitation, and had lost considerable weight. His symptoms had persisted for two years.

Examination showed a short stocky white male, weighing 149 pounds. He was extremely nervous, had a slight exophthalmus and a tremor of the hands. The thyroid showed a smooth bilateral enlargement, the pulse was 117, and the basal metabolic rate was +49 per cent.

He was given phenobarbital until February 14, 1933, then placed on fifteen drops of Lugol's solution daily. This was continued until March 21 but no improvement was noted.

He was next seen on May 5 when his symptoms were unchanged and he was again given Lugol's solution until May 15. No beneficial effect was noted. On May 25 the basal metabolic rat was +49 per cent.

The patient first came under the writer's observation on June 2, 1934. His weight was 144 pounds, the blood pressure 126/88 and the pulse 96. There was a smooth bilateral thyroid enlargement, a slight exophthalmus and a marked tremor.

First Course: Two per cent sodium fluoride, 80 drops daily, was started on June 2, 1933. The amount was gradually increased until 200 drops were being taken by the third week. Fluorides were discontinued on June 30 and in their place 15 drops of a saturated solution of potassium iodide were given daily for one week. On July 7 the weight was 150 pounds, the blood pressure was 150/90, the pulse 90. No tremor was noted and the patient seemed better. On July 10 the basal metabolic rate was +30 per cent.

Second Course: A second course of fluorides was started on July 14. Two hundred drops of 2 per cent sodium fluoride were given daily for the next four weeks.

On August 11 fluorides were discontinued and 15 drops of saturated solution potassium iodide given daily for two weeks.

August 25: Weight 146 pounds; the blood pressure 150/100, the pulse 84, the basal metabolic rate +1 per cent. Tremor, nervousness and excessive perspiration no longer present. Thyroid barely palpable. No exophthalmus noted.

September 22: Weight 153.5 pounds, blood pressure 140/90, pulse 84. No nervousness, sweating, insomnia or tremor. Thyroid barely palpable. Objectively and subjectively there was no evidence of hyperthyroidism and the patient's physical condition was excellent.

Case 5.—A patient with a toxic adenoma who showed no improvement after four weeks of potassium iodide. Three courses of fluorides and iodides were given. At the end of the first the basal metabolism was +35 per cent. At the end of the second it was +21 per cent. By the end of the third it was +11 per cent and the patient showed evidence of full recovery.

E. C., white, female, aged forty-four, first came under observation June 13, 1933, complaining of palpitation, faintness, marked fatigue and emotional instability. In spite of an excellent appetite she continued to lose weight and noticed, in addition, excessive warmth of the skin and a generalized tremulousness. These symptoms first began in October, 1932. As far back as she could remember she had had a swelling in the left side of the neck and since the onset of her present illness had noticed that she felt better when this swelling was the most prominent.

Examination revealed a tall, thin, alert, restless woman who emphasized her conversation with rapid movements of the hands and frequent contractions of the facial muscles. Her weight was 126 pounds, the blood pressure 166/100, the pulse 120. No eye signs noted. Isthmus of thyroid enlarged and palpable. Right lobe of thyroid enlarged to the size of a hen's egg and smooth. A systolic murmur—untransmitted—was present in the mitral area. A fine tremor of the hands and fingers was noted. X-ray revealed two abscessed teeth which were removed by July 7, 1933. The basal metabolic rate June 14, 1933, was +16 per cent. She had been taking potassium iodide for four weeks previous to her first visit to the clinic.

First Course: Two per cent aqueous solution sodium fluoride, 90 drops daily given till June 20.
120 drops daily given for the next ten days.
200 drops daily given for the next fourteen days.

Fluorides were discontinued July 14, 1933. During their administration the patient's weight dropped to 121.5 pounds, her pulse rate and blood pressure readings were unchanged and both her subjective and objective symptoms remained the same.

Fifteen drops of saturated solution potassium iodide were given daily from July 14 to July 28. Her weight returned to 126 pounds and she felt improved.

The basal metabolic rate on August 9 was +35 per cent.

Second Course: A second course of fluorides was started August 11 and continued at the rate of 200 drops daily to September 8. During this period her pulse rate was lower, averaging about 100, but her tremor and other symptoms continued unaltered.

Fifteen drops of saturated solution of potassium iodide were given daily for one week. On September 18, 1933, the basal metabolic rate was +21 per cent. At this time the right thyroid enlargement looked diminished in size. She felt better but the pulse was still rapid, and there was still some tremor.

Third Course: A third course of fluorides was started September 22 and continued for four weeks through October 13. Saturated solution of potassium iodide was then given for one week. The basal metabolic rate on October 23 was +11 per cent.

On October 27, 1933, the weight was 124.5 pounds, the blood pressure 160/100 and the pulse rate 96. The right lobe of the thyroid, while firm, was reduced in size. There was no tremor. The patient was quiet, much more reserved and said she had not felt as well since before the onset of her present illness.

COMMENT

The hyperplasia of the alveolar epithelium of the thyroid may be considered to be of three types. The first results from a deficiency of the raw basic materials necessary for the production of thyroxine. The second is produced by a deficiency of the raw materials created by too rapid a production of thyroxine. The third is a more advanced form of the second that labors, in addition, under the added load of accumulated incompletely formed metabolites. The first type occurs in the simple goiters and may be promptly arrested by supplying raw materials such as iodine in adequate amounts. The second and third types co-exist in the hyperactive gland in varying proportions. Arrest of these two closely related forms of hyperplasia by supplying raw materials can be effected when the former greatly exceeds the latter, and then only temporarily, since the prolonged administration of the agent in common use for this purpose, iodine, is quite likely to convert the second type of hyperplasia to the third (which is iodine-refractory).

The need for iodine is common to all three types of hyperplasia but the limitations to its use in the two types that exist in the hyperactive gland—where it is needed most, —seriously curtail its value. If it were possible to invoke some means of first converting the second and third types to the first, then the iodine response would simulate that which occurs in the simple goiters. To bring this about, it would be necessary to create a condition analogous to that which induces the hyperplasia of simple goiter, viz., a deficiency of the raw products essential for the manufacture of thyroxine.

This report concerns itself with the results of an effort to shunt the most essential of the basic products, iodine, away from the thyroid gland through the use of the fluorides. The fluorides were selected because of their successful employment in the treatment of hyperthyroidism as reported by Goldemberg[1] and Gorlitzer,[2] and because of their standing as the most powerful of the elements comprising the halogen series. Their known ability to displace iodine from chemical combinations in which it exists commended them for this particular use.

SUMMARY

Five patients with hyperthyroidism, previously treated with iodine with indifferent results, were subjected to the alternate administration of fluorides and iodides. All showed an arrest of the hyperthyroidism after a treatment period of varying duration.

The first patient, with an advanced grade of hyperthyroidism of fairly long duration, was treated for eight months, and has remained well since January, 1933 (one year).

The second patient, with a mild degree of hyperthyroidism of short duration, responded favorably to six weeks treatment, and has had no recurrence since February, 1933 (eleven months).

The third patient, with a toxic adenoma of long duration, was treated for six months and has had no recurrence since January, 1933 (one year).

The fourth patient, with a toxic adenoma of two years' standing, responded after three months treatment and has had no recurrence since August, 1933 (seven months).

The fifth patient, with a toxic adenoma of nine months duration, improved after four months treatment, and has had no recurrence since October, 1933 (five months).

CONCLUSION

The uniformly favorable response that followed the alternate administration of fluorides and iodides in the small series of cases would indicate that the method as outlined here may prove of value in enhancing the effect of iodine in hyperthyroidism.

613 Professional Bldg.

REFERENCES

1. Goldemberg, L.: Action of fluorides in exophthalmic goiter and hyperthyroidism. Semana Medica, Buenos Aires, 38:1809 (Dec. 17), 1931, and 39:1659 (June 2), 1932.
2. Gorlitzer, V.: Ein Neuer Weg Zur Behandlung Der Thyreotoxikose Mit Fluorwasserstoffsaure. Med. Klin., 28:21 (May 20), 1932.

AN ETIOLOGICAL APPROACH TO ASTHMATIC BREATHING

STANLEY W. INSLEY, M.D.†
DETROIT, MICHIGAN

Asthma, strictly speaking, is nothing more than a respiratory symptom. This symptom is characterized by wheezing or musical air sounds, and is associated with disturbances of the respiratory cycle. The audible symptoms are governed by the acoustic laws. Production of the audible asthmatic symptom is, mechanically speaking, absolutely contingent upon a partial local obstruction of the normal respiratory air flow. There may be a partial encroachment in any zone of this air flow. The site and type of partial occlusion will determine not only the alterations in respiratory rhythm, but also the changes in air sounds.

A partial obstruction may involve only one bronchus. On the other hand there may be multiple or diffuse obstructions, involving many or all of the smaller bronchi. Partial obstructions may be very rapid and acute in onset, as, for example, with foreign body and mucus plugging. Again there is also the slow and insidious onset often seen as a result of other long-standing pathology. Partial obstructions may be more or less constant as with chronic fibrotic changes, or be paroxysmal as in allergic reactions.

The remote causes of partial obstructions are legion and numerous secondary complications are the rule. Infections and other changes intermingle in a confusing fashion. Partial obstructions may easily proceed to total obstruction. This frequent complication induces a whole new set-up of symptoms and prognostic elements. The syndrome of total stenosis is an object of study by itself. Its lurking menace should be remembered and watched for in every asthmatic. A partial obstruction, arising in any portion of the air column, may originate from extra- or intra-bronchial pathology, or be subsequent to changes in the bronchial wall itself.

Whatever the etiology or wherever the site, there will be the audible and physical signs of a check-valve, by-pass, or stop-valve mechanism.

LOCALIZATION OF STENOSIS

Certain infections and metabolic changes are often recognized or suspected by their tendency to produce changes in restricted areas. These changes may also be characterized by their mode of production. A precise knowledge of the site, type and degree of partial obstruction will often reveal the remote etiology. Bronchoscopic examinations are not so often needed if signs and symptoms are appreciated. X-rays are invaluable, yet it is surprising how often the exact level of the obstruction and its cause may be ascertained without radiography. The following set-up of physical signs and symptoms is offered as a guide to the diagnosis of the more common partial stenoses at various levels:

I. PARTIAL TRACHEAL STENOSIS

1. *Constant mild to intense dyspnea with inspiratory* effort and stridor usually predominant. The effort and stridor may be reversed with a check valve set to impede the expiratory air flow.
2. Irritative cough—brassy and non-productive. Intensity increased with proximity of pathology to carina.
3. *Intermittent, suffocative attacks.*
4. Generalized inter-costal retraction on inspiration. This retraction is absent and actual bulging may occur with expiratory impediment and increased intra-pulmonic pressure.
5. Laryngeal excursion if inspiratory obstruction is at or above level of glottis. No excursion if obstruction is at lower level.

II. PARTIAL STENOSIS OF A LARGER BRONCHUS

1. *Dyspnea usually not marked.*
2. Cough increased by proximity of pathology to carina.
3. Wheeze or râles on inspiration, expiration, or both.
4. Not ordinarily characterized by severe suffocative attacks.
5. *However, dyspnea and suffocative symptoms may be induced or increased by patient reclining on unaffected side.*
6. Breath sounds or percussion notes *may* be altered in subserved lobe or lobes.
7. Inter-costal retraction and narrowing or inter-costal bulging and widening *may* be noted in areas corresponding to subserved lobes.
8. Diaphragm may be higher or lower than normal on the side of the bronchus involved.
9. This level of partial obstruction is least likely to give definite symptomatology.

†Dr. Stanley W. Insley, graduate of Notre Dame University, received his B.Sc. in 1910. He graduated from the Detroit College of Medicine and Surgery in 1922. He is a member of the Staffs of Providence Hospital, Detroit, and William B. Seymour Hospital, Eloise, and of the Society for the study of Allergy. His practice is limited to internal medicine, including allergy.

III. PARTIAL OBSTRUCTION OF THE SMALLER BRONCHI

(Second degree to bronchioles)

1. *Constant mild to intense dyspnea. Inspiratory* effort and wheeze predominant. Expiratory wheeze may co-exist.
2. Cough not necessarily present.
3. *Inter-costal spaces retracted.* May bulge in suffocative attacks.
4. *Chest usually flat.* Often deformed from continued inspiratory traction efforts.
5. The diaphragm is usually raised. It may be at a normal level or lowered in suffocative attacks.

IV. PARTIAL STENOSIS OF BRONCHIOLES

1. Spasmodic dyspnea, mild to intense, with *expiratory* effort and wheeze predominant.
2. *Chest barrel-shaped.*
3. *Inter-costal spaces usually bulging.*
4. Hyper-resonance on percussion.
5. Diaphragm usually low.

Suffocative attacks from obstruction at the level of the smaller bronchi or bronchioles are not accompanied by loud stridor as from a similar obstruction at a tracheal level. This change in loudness, pitch, etc., is an acoustic result of a difference in lumen of the tubes, length of air column, change in the rate of air flow, and a change in character of the confining walls.

It has been noted above that the valve mechanism of a certain partial obstruction may be set to reverse the respiratory phase ordinarily producing a stridor or wheeze. Such reversals may be noted particularly with foreign bodies, mucous balls, or loosely attached polypoid growths projecting into the bronchial lumen.

The symptoms of total obstructions and atelectases are not considered in the above synopsis. They are decidedly confirmatory of the level of obstruction when present. We will repeat that the employment of the x-ray and fluoroscope, contrast media, and of the bronchoscope is of tremendous value in confirming a suspected pathology. These diagnostic luxuries are not always available, however, and their technical interpretations are not considered in the above set-up of purely physical findings and symptoms.

PULMONARY PATHOLOGY

The chest of an average chronic asthmatic is a veritable museum of pathology. Compensatory, infectious, or mechanical changes, incident to irritation or partial stenosis, may all tend to render a single etiological diagnosis impossible. There can be no attempt to classify arbitrarily some asthmatic patients into allergic, cardio-renal or reflex types.

Cases in which the primary cause of illness may be found and removed often exhibit extensive bronchiectic or emphysematous changes so pronounced that total relief of symptoms is out of the question. Newer radical measures might aid some of these complications. Most of the chronic cases are doomed to prolonged observation and repeated palliative measures. It is useless to speak of a cure in many of these cases.

A diagram of general respiratory pathology is of aid in arriving at an etiological summary. Any outline of this nature must, however, always be co-related with other organs, such as the nose and sinuses, tonsils, the systemic status, and with bacteriological, allergic, blood and x-ray findings. All or any of the pathological items listed in such a scheme are not necessarily important to the asthmatic symptom. Neither can they be overlooked in any future therapeutic plan.

There are numerous exhaustive treatises dealing with practically all of the conditions mentioned in the accompanying outline. It is not of immediate concern to enlarge separately upon individual diagnoses. Any collection of asthmatic cases will bring out, however, certain relationships, foremost of which is, that practically no case will give only one pathological finding. Bronchiectasis of some degree and infection of some type are to all intents a constant finding in chronic asthma. They are the inevitable consequences of continued partial obstruction. They can always be found when positive allergic, new growth, or irritative signs are obscure. An acutely developing partial obstruction, as from foreign body, urticaria, secretion or spasm, may not immediately exhibit such infection or bronchiectasis. Congenital bronchiectasis or that form following infection with local atelectasis and fibrosis may antedate any asthmatic symptom.

ALLERGY

The literature available upon allergy and its relation to asthmatic breathing is voluminous. There has been excellent progress in the study of human hyper-sensitivity. Two basic questions however, are still unanswered. First, what constitutes the so-called allergic diathesis? Secondly, granting the presence of circulating specific and transferable reagins, what is the determining factor producing asthmatic breathing in one patient, initiating an eczematous lesion in an-

PRIMARY PATHOLOGY OF BRONCHIAL ASTHMA

BRONCHI
Larynx
Trachea
Bronchi
Bronchioles

PARTIAL OBSTRUCTION
(Asthmatic stridor or wheeze present)

- Extra-bronchial
  - Aneurysm; circulatory congestion; enlarged glands; new growths; increased intrapulmonic pressure; decreased vital capacity.
- Intra-bronchial
  - New Growth
    - Malignant
      - Carcinomas, etc.
    - Non-malignant
      - Polyps, cysts, hyperplasias, etc.
  - Foreign body
  - Transudate
    - Infection
      - Bacteria
      - Fungi
      - Protozoa
    - Hypersensitivity
      - Inhalation
      - Ingestion
      - Injection
      - Infection
    - Irritation
      - Chemical
      - Mechanical
      - Drug
      - Metabolic
  - Inflammation
  - Secretion
  - Urticaria
  - Spasm
    - Direct
    - Reflex
  - Fibrosis

ASSOCIATED THORACIC PATHOLOGY

LUNGS
Bronchiectasis
Congestion or edema
Infection
New Growth
Pneumoconiosis
Fibrosis
Arteriosclerosis
Embolism-infarction
Abscess
Gangrene
Empyema
Atelectasis

CARDIA
Heart disease may be associated with, or aggravating, an asthmatic syndrome. Heart condition may limit the prognosis.

PLEURA
Inflammation
New Growth
Empyema
Effusion
Chylo or hydro-thorax
Pneumothorax

MEDIASTINUM
Inflammation
New Growth
Circulatory malformations; aneurysm; hypertrophies; etc.

DIAPHRAGM
Inflammation
Abscess
Spasm
Paralysis
Hernia

other, and inducing gastro-intestinal symptoms in still another? We shall not attempt here to answer these questions.

The apparent incitants of allergic reaction have reached an astonishing figure. None but those handling a sufficient volume of cases can be prepared either by experience or equipment to properly trace them out.

The presence in an individual of several or more positive allergic skin reactions suggests the probability of a dust, pollen, epidermal or food substance being the immediate proximal cause of the asthmatic symptoms. These reactions are often of but slight value however in tracing out the actual incitant. A trial and error method of elimination must be used to confirm the suspected article or articles.

A marked family history of hay-fever, asthma, urticaria, eczema, or migraine may be of help in deciding whether any specific case of asthmatic breathing is induced or aggravated by an allergic mechanism. A family history applied to an individual always has its limitations. A personal history of hay-fever, urticaria, or eczema is of inestimable value.

The application of group testing, elimination diets, passive transfer, and a knowledge of the chemical components of dust, food and other substances are matters which are easily accessible in any of the numerous publications dealing with allergy.

Theoretically, an allergic reaction may eventuate in spasm, urticaria or hypersecretion. Co-existing non-allergic pathology

may modify an expected allergic response, and be confusing unless the possibility be kept in mind.

It has been suggested from various observations that the smaller bronchi or bronchioles are mostly involved in what we are pleased to call "true" bronchial or allergic asthma. Partial allergic obstructions of the bronchioles undoubtedly induce an expiratory wheeze, along with the other customary concepts we hold of true asthmatic chest signs. On the other hand, *non-allergic* factors may also give rise to obstructive pathology of the bronchioles, and the non-allergic symptoms may then be suggestive of an allergic etiology. Contrarily, a true allergic edema may induce partial obstruction in a large upper bronchus or the trachea, and in this instance there is a marked change in physical findings from the more common type of allergic asthma. There would be a probable exaggeration of the *inspiratory* air sounds. It is possible for both inspiratory and expiratory difficulty to co-exist in the same individual. Indeed, most of the classical descriptions of "true" asthma in the literature cannot but point to both types of respiratory impediment.

SPASM

Bronchial spasm from any cause is difficult to prove. Allergic spasm of the bronchi or bronchioles in man has been both affirmed and denied. Adrenalin, being a non-specific bronchial dilator, may relieve in the absence of a so-called allergic factor. Its benefit in true allergy is, however, the most striking. Allergic asthma, accompanied by infection, fibrosis, massive mucous plugging or individual adrenalin tolerance, may not exhibit such relief.

The bronchial tubes are, after all, but a series of hollow viscera. Spastic reaction may presumably occur here as in other hollow organs, either from direct local stimulation or reflexly from distant foci. The bronchial machinery is constantly adapting itself to temperature and humidity changes, dust, infections, and physical demands. It may be protecting itself from irritation and infection, or accommodating its functions to altering oxygen requirements. The threshold of such physiological reactivity may be modified by local or general causes. Pollens, dusts, infections, scars or toxins may serve as local causes inducing a hyper-irritable state of reactivity. A normal physiological stimulus may then set up an abnormal symptom.

Sudden changes of temperature or humidity often result in an attack of asthmatic breathing. Irritating gases, physical exercise, whether voluntary or from coughing, may do likewise. Change in position, as in retiring or arising from bed, with a consequent spilling of bronchiectic contents, will induce coughing, and may develop into a spastic asthmatic attack. Emotional instability, glandular dyscrasias, and remote infections or pathology in the gastro-intestinal or other organs, appear at times to influence an already unstable bronchial system.

Infections of the mouth, tonsillar ring, nose, and accessory sinuses are a potent factor in promoting and maintaining a hyper-irritable bronchial system. These upper respiratory infections are fertile sources of lower respiratory re-infection. Moreover, the autonomic innervations of the nasal and bronchial systems are closely inter-related. Stimulation of the nasal membranes, by dusts, odors, or temperature changes, may induce a spastic bronchial reflex, depending upon the presence of hyper-irritability in the naso-bronchial reflex arc. This naso-bronchial hyper-irritability may be only one part of a general vagotonia.

NEW GROWTHS

New growths as a cause of partial bronchial obstruction are more common than generally recognized. Such new growths may be either simple hypertrophies or malignant. An increasing use of the bronchoscope is partly responsible for the increasing diagnoses. Carcinomas of the bronchi and lungs are, in some localities, possibly next in frequency to those found in the stomach and the uterus. Non-malignant polypoid growths projecting into the bronchial lumen are not uncommon. An enlarged thymus or thyroid gland, and hypertrophic or malignant tracheo-bronchial glands may induce irritation or compression stenosis at various levels of the tracheo-bronchial air flow. New growths, whether of the bronchi, lungs, mediastinum, or pleura, may co-exist with infection, allergy, or other pathology.

INFECTION

It is difficult to evaluate the general etiological importance of infection to so-called "asthma." Allergists have been prone to

underestimate its potentialities. Surgeons and internists may err in its over-emphasis. We prefer to remember that an infectious process may precede, co-exist, or follow any other etiological factor, or it may be the prime factor. A respiratory infection may initiate or aggravate an attack. An extra-respiratory infection with fever often relieves an asthmatic.

The finding of certain organisms in the sputum does not necesarily incriminate them in the production of symptoms. Sinus washings or bronchoscopic aspirations, of themselves, are not conclusive. Skin tests and serological manipulations are often difficult of interpretation. Changing concepts of bacterial mutations and life cycles increase the difficulties. The diagnosis of fungus infection is even more intricate and time-consuming.

An organism to be detrimental to an asthmatic, need not be limited to the respiratory tract or even found within the body. A systemic or remote focal infection may be a source of trouble. Free floating spores of fungi, yeasts, or molds may set up a contact allergy similar to that of pollen hay-fever, or asthma. The original bed of growth for an irritating spore-producing fungus may be found on nearly any site of nitrogenous or carbonaceous substance. Fungi, bacteria, and protozoa may irritate the patient, either by inhalation of spores, contact, ingestion, or actual infection.

Bacterial, fungal and protozoal infection of food or other animal and vegetable matter may produce by-products affecting the vasomotor system. Ergot is a prime example of such a fungal by-product. Cheese is an example of a mold-infested food. The ingestion or inhalation of these by-products or infected substances often induces serious symptoms in suitable individuals. These observations lead one to note that bacteria, fungi, or protozoa may be "non-pathogenic" in the ordinary sense, and yet be a source of illness. We might recall that "non-pathogenic" organisms have been thought to exhibit pathogenic properties after a preliminary experimental sensitization of the recipient animal to the same strain of bacteria. The ordinary infections, as we have learned them in the past, are but a few isolated manifestations struck off from the full keyboard of possible offending organisms.

MISCELLANEOUS

Thick mucous secretions, lying in the bronchi or bronchioles, play an important rôle in the production of asthmatic symptoms. The causes for such secretions are not always obvious. Infection or inflammation, allergy, and chemical irritation, any or all, may play a part in different instances. The type and urgency of symptoms from secretory obstructions may vary, depending upon total or partial obstructions, and upon upper bronchial or lower bronchiolar involvement. Total occlusions of the smaller bronchioles with infection, pneumitis, and local atelectasis, are very common. Total occlusion of a large bronchus by mucus is dangerous and may require immediate bronchoscopic removal.

Mucous secretions, casts and their like, are all foreign bodies in a sense. There is also the rather frequent aspiration of buttons, coins, food, and so on. The diagnosis of aspiration foreign body stenosis is usually made with no difficulty if the condition is suspected. The history or suspicion of aspiration may be quite vague or absent, however, and the possibility of a foreign body partial stenosis has been often and sadly overlooked.

Fibrotic or sclerotic changes, involving the larynx, trachea, bronchi or bronchioles, may induce a chronic partial encroachment upon the normal air flow. Syphilitic and tuberculous infections are the most commonly recognized sources of such changes. Fungal infections, in the author's opinion, have been often overlooked. They, too, give granulomatous and tubercular types of inflammation with severe sclerosis in certain cases. The symptoms of cicatricial narrowing of the air lumen may be of inspiratory or expiratory embarrassment, or both, depending upon the site of involvement. Syphilitic, tuberculous, or fungal fibroses, as a cause of asthmatic symptoms, may be more frequent than luetic, tuberculous, or fungal allergy.

Thyroid, renal, gastro-intestinal, or other organic diseases may result in increased or retained metabolic by-products. Such substances in excess may either induce or aggravate an existing broncho-stenosis.

Sclerosis of the pulmonary blood vessels may, in rare instances, induce an asthmatic type of breathing. Oerza's disease has been frequently diagnosed as bronchial asthma. Compression stenosis of the trachea or bron-

chi from aortic aneurysm is often a source of an asthmatic type of respiration. A thorough examination is often required to differentiate this condition from a similar compressive stenosis from enlarged or malignant mediastinal glands.

A lessened vital capacity, as for example in cardiac disease or emphysema, requires an increased compensatory ventilation to meet the demands of exercise. This results in an increased rate of flow of the tidal air. Under these circumstances a respiratory wheeze is prone to occur with a minimum of obstruction.

Pulmonary congestion is often associated with a wheezy type of respiration. Pulmonary edema and circulatory transudates may impinge upon the normal bronchiolar air lumina. The respiratory flow of air may be locally restricted and a wheeze may be the result. Cardio-renal asthma, however, as a term, is often a misnomer. Auscultation may reveal no whistling or wheezing râles and only a simple dyspnea, associated in no way with local encroachments upon the normal air channels.

Lower bronchial expiratory obstruction, with alveolar distension, and increased intra-pulmonic pressure, has occasionally given bronchoscopic evidence of compression stenosis of a higher bronchus or the trachea. A vicious circle of respiratory obstruction is set up which can only be permanently corrected by relief of the primary lower bronchial obstruction.

A study of the changes in the intra-pulmonic pressure, as related to the easily compressed or distended bronchioles, is most interesting. An integration of these factors with the changes of vital capacity noted in status asthmaticus, cardiac disease, etc., results in an exceedingly complex problem.

There is no short cut to the fathoming of an asthmatic's pathological possibilities. There has been a large amount of doubt in physicians' minds as to the probability of permanent relief for these sufferers. There is just as great a hopelessness and despair exhibited by the average patient. These states of mind represent the extremes engendered by incorrect, or at least insufficient, diagnoses.

One can not be so sure that any one existing specialty should be entrusted entirely with the diagnosis of asthmatic breathing. The human tendency of emphasizing a personal proficiency may work to the general advancement of medical knowledge, and yet be detrimental to an individual patient. This does not bar one from limiting his work to the alleviation of these patients, providing an open mind is kept as to the manner of diagnostic and therapeutic approach.

There can never be a "cure for asthma." The varieties of pathological lesions found preclude any such hope. It might be better if the term "asthma" itself were dropped from our diagnostic vocabulary. This statement holds in full force against those who would limit the term "bronchial asthma" to that bronchial entity initiated by an allergic mechanism. The mechanism of allergy itself has not been any too well established.

Asthmatic breathing, may we reiterate, is but the symptomatic result of a pathological partial bronchial obstruction. A precise clinical diagnosis of these pathological obstructions should be indicated by some such term as tracheal or bronchiolar stenoses, depending upon the site involved. The degree of obstruction should be noted, *i.e.*, whether partial or total. A description would be incomplete without some reference as to whether the partial obstruction were paroxysmal, intermittent, or permanent.

The field is perfectly clear for a substitution of such terms as "allergic asthma," "non-allergic asthma," and "extrinsic or intrinsic asthma." We might far better employ such phrases as "allergic stenoses," "spastic stenoses," "inflammatory stenoses," "mucous stensoes," or "foreign body stenoses," etc., depending upon the actual bronchial pathology present.

An uncomplicated, allergic bronchiolar stenosis is probably best handled by one of wide experience in judging the allergic phenomena. A foreign body partial stenosis of a bronchus is necessarily relieved by the bronchoscopist. There are, beyond these, a large number of spastic, inflammatory and mucous stenoses, complicated by infection, fibroses, emphysema, bronchiectasis, and, possibly, hyper-sensitivity. This large heterogeneous group forms the bulk of asthmatic patients seeking relief.

There are only two alternatives if we are to progress in our diagnosis and treatment. Either the "allergists" must be more inclusive in their clinical pathological reports, or else, "allergic asthma" must be taken over by diagnosticians who will regard it as just another type of respiratory stenoses.

FUNCTIONAL DISORDERS OF THE OVARY*

JEAN PAUL PRATT, M.D.†
DETROIT, MICHIGAN

The practice of medicine would be simplified if all the problems encountered could be resolved into clinical entities which include a known cause, definite symptoms and a satisfactory response to specific treatment. Achievement of this correlation of cause, symptom and treatment is the goal toward which physicians, both collectively and individually, are striving in all branches of medicine. Progress in many fields of investigation has been sufficient to establish confidence that certain symptom-complexes are the result of definite and demonstrable causative agents which either may be removed or their effects nullified by application of the proper therapy. Other fields appear more complex, for the symptoms are not constant, and their relation to the exciting cause is not well established, therefore a wise choice of treatment is often difficult. Functional disorders of the ovary illustrate this latter group.

While organic lesions of the ovary are usually well defined and readily recognized, and in many instances disturb the function of the ovary, it is far more common to encounter functional disturbance in which it is not possible to demonstrate any related organic change in the ovary. This lack of correlation may be explained by the inability to inspect the ovaries carefully when the symptoms noted are disturbing but not serious. Furthermore, there are many physiological changes in the body which cannot be definitely related to any anatomical variation.

The two distinct functions of the ovary, *i.e.*, production of ova and formation of an internal secretion, are neither entirely independent of each other, nor are they independent of other parts of the body, especially the other glands which produce internal secretions. This interrelationship alone would make the subject complex even if the other factors involved were well understood. Since endocrinology is a relatively new field of science in which important advances occur so frequently that the whole subject is in a state of flux it would be folly to attempt, in a limited space, to present the whole problem. It is desirable, however, from time to time, to evaluate various phases of the subject in order to differentiate the purely theoretical from the practically useful contributions.

Since the level of any body function is controlled by a number of interdependent agencies, assignment of a specific function to a single gland cannot mean that the function of that gland is performed independently, but it does imply that the particular gland under consideration is the dominant factor. It is from this point of view that ovarian function is considered here.

Criteria as evidence of variation in the level of ovarian function are either subjective or objective. The former (subjective) are not altogether dependable, but it is to be hoped that advances in the field of psychiatry will improve their usefulness in the future. The latter (objective) are: external and internal characteristics (uterus, tubes, breasts, etc.); function of the uterus; and lactation.

The most frequently useful symptom indicator of ovarian function is the rhythm and amount of menstrual flow. If the accuracy of this indicator seems questionable it may be improved by instructing the individual to keep a chart which shows the interval, duration and amount of flow. A few of the variations of menstruation will be briefly considered.

MENOPAUSE

Menopause may be either artificial or natural, according to the cause of onset. The artificial menopause which follows ablation of the ovaries is an excellent clinical demonstration of the dependence of uterine function upon ovarian secretion. Menstruation ceases and the uterus atrophies when the ovaries are removed. No substitute has been found which will completely reëstablish the menstrual flow in the ab-

*From the Department of Gynecology and Obstetrics of the Henry Ford Hospital, Detroit.

†Dr. Pratt received his A.B. from Ohio State University, and his M.D. from Johns Hopkins Medical School, 1910. He was instructor in surgery at the University of California from 1914 to 1917, and is now Chief of the Department of Gynecology and Obstetrics at the Henry Ford Hospital.

sence of ovaries. Some of the apparent exceptions to this are explained by lack of satisfactory evidence that all ovarian tissue has been removed. However, administration of follicular hormone delays the regression of sex characteristics, particularly atrophy of the uterus. Such an atrophic uterus may be stimulated to periodic growth even months after the ovaries have been removed. In one instance treatment with hormone was begun two years after operation. There followed an enlargement of the uterus associated with softening of the organ, both of which disappeared when treatment was withheld and reappeared when treatment was again instituted. In a few instances growth of the endometrium and some bleeding have been recorded after using large doses of theelin. The subjective symptoms, nervousness and hot flashes, are apt to be more pronounced the earlier in life that oöphorectomy occurs.

The proper treatment for menopausal symptoms is controversial. The patient, as well as the physician, is aware of the association of certain symptoms with loss of ovaries. It would seem logical to supply the deficiency by administration of ovarian preparations. Accordingly, all sorts of specific therapy have been employed (ovarian extract, whole ovary, ovarian residue, corpus luteum, follicular hormone, etc.). Excellent results due to all of these agents have been reported. There seem to be two fallacies in judgment of the manner in which the results are obtained. First, the psychotherapeutic effects have not been sufficiently emphasized, and on this account satisfactory results have been reported from the use of ovarian products in which no potency has been demonstrated experimentally as frequently as from preparations known to be potent. Second, results obtained have not been checked by adequate controls.

Natural menopause is a gradual process which marks the close of the reproductive period in life manifested by a variety of changes, the most conspicuous being variations in rhythm or amount of menstruation. There seems to be good evidence that in the earlier stages of the natural menopause a hyper-hormonal state may exist with an increased excretion of follicular hormones in the urine and an increased amount of menstrual flow. This affords an explanation for the cases in which there is apparent a greater menstrual activity about the time that the menopause is expected. While this overactivity is usually self limited, it is the source of considerable anxiety lest a more serious organic lesion be overlooked. Frequent observations and careful judgment are important during this period.

The hypo-hormonal state associated with cessation of menstruation at the time of transition from the reproductive period to senescence should be accepted as a normal physiological process. During this transition many changes occur, both somatic and psychic, which are largely independent of ovarian function; but since cessation of menstruation is so conspicuous, other less conspicuous variations are overlooked. So far as influencing the flow is concerned, specific ovarian therapy at the menopause is of little avail. As psychotherapeutic agents the various ovarian preparations have been very useful, and their continued use for such purposes should be encouraged. The anterior lobe-like substance obtained from urine of pregnant women does seem to have a specific influence on the hyper-hormonal state, but little, if any, effect on the hypo-hormonal symptoms.

SCANTY AND INFREQUENT MENSTRUATION

The level of ovarian function is lowered in cases of scanty and infrequent menstruation. While this may be associated and dependent upon organic change in the ovary, more frequently it is due to extraneous factors, among which disturbance of the thyroid and pituitary is common. Many such patients have a low basal metabolic rate, as well as other symptoms of hypothyroidism. A large portion of this group may be benefited by proper thyroid therapy. Still others respond to potent products of the anterior lobe-like substance from urine, and a few have been brought to a normal level by the administration of an ovarian preparation, theelin, estrogen, etc.

While there is only doubtful evidence that any gland product stimulates activity of the gland from which the preparation was derived, there is ample evidence that deficiency of gland secretion may be partly or wholly corrected by administration of the gland product. Clinically, there seems to be a small group of cases with scanty menstruation on the basis of ovarian deficiency which are corrected by follicular hormone. The dosage required is difficult to estimate, for at pres-

ent there is no satisfactory measure of the amount or deficiency existing in any particular case. Furthermore, it is not definitely known whether the action is qualitative or quantitative.

Stimulating ovarian activity by correction of thyroid deficiency has been frequently observed. Other symptoms of hypothyroidism may be present and yet a normal basal metabolic rate is reported. This is not surprising when the difficulty in obtaining basal conditions is considered. Therefore, in such instances the cautious administration of small doses of thyroid is not amiss, and the effort is often followed by good results. Frequent observations of this group of patients are necessary.

Anterior lobe-like substance from urine of pregnant women has been used in cases of scanty and irregular menstruation. It has been assumed to have a definite stimulating effect on the ovary. Its manner of action varies in different species and, therefore, in man such therapy is still experimental, and consequently should not be used empirically until more is known about the extent and duration of its action.

PRIMARY AMENORRHEA

Puberty marks the transition from the period of growth to the reproductive period. The changes which occur during this time are numerous and extensive. The process of transition is gradual and for its successful completion requires correlation of all body functions. The most conspicuous event during this period is the establishment of menstruation so that the onset of menstruation has been used almost synonymously with puberty. The time of onset may vary normally within five years. Failure to menstruate at the normal time is referred to as primary amenorrhea. Specific ovarian therapy in this group of cases has been most disappointing. Apparent hypofunction of the ovary is only one manifestation of failure of correlation of body functions. The problem may be nutritional, environmental or constitutional. This group of cases is worthy of careful and complete study of all body functions. A few have been improved by thyroid therapy and occasionally one appears benefited by anterior lobe-like preparations, but caution should be used with the latter until it has been more clearly demonstrated that there is no harmful effect on the ovary.

EXCESSIVE MENSTRUATION

Increased flow or shortened interval does not indicate necessarily hyperfunction of the ovary. In fact, there are many who deny that hyperfunction of the ovary ever occurs.

There is a fairly well defined group in which excessive and prolonged flow is associated with hypertrophy and hyperplasia of the endometrium. The condition is most common as the patient approaches the menopause and in girls shortly after the onset of menstruation. The diagnosis can be established by examination of curettings from the uterus which show hyperplasia of endometrium with cysts which can be seen in the microscopic section, often in the gross. A great many of these patients respond favorably to the administration of anterior lobe-like preparations. It is not equally effectual in all instances, for many are relieved by one series of injections, others require several series of injections, and a few derive no benefit. The dosage is still problematical, but five daily injections of one hundred rat units of antuitrin s.* given a week or ten days before the next flow is expected has served well in most instances.

COMMENT

The subject of functional disorders of the ovary is too broad to cover in detail in such a limited discussion. Translation of experimental work in animals to man is often difficult, but the advances made in laboratories suggest many possibilities for further study of similar problems in man by clinicians. Since human experiments can not be planned on a wholesale scale, but information collected piecemeal as cases present themselves, the observation and coöperation of all clinicians is needed.

Experience has shown that most of the benefit derived from dried extracts of ovary has been psychic, and as psychotherapeutic agents they are valuable. The newer preparations shown to be potent in lower animals have not reacted in a similar manner in the human subject. However, some definite results have been obtained with follicular hormone although not to the extent that animal work would lead us to expect.

The fact that ovarian transplants have satisfactorily substituted for normal ovaries, while ovarian preparations have not proven

*Material for this study was furnished by Parke, Davis and Company.

so effective, would seem to indicate that deficiency of the latter may be either qualitative or quantitative. While normal ovarian secretion enters the blood stream almost continuously, artificial preparations have not been administered in a similar manner. Furthermore, an accurate measure of ovarian deficiency has not been found. Therefore, it is not possible artificially to duplicate ovarian function of internal secretion.

Brilliant results from animal experimentation have aroused considerable hope for similar reaction in man, but the dissimilarity of physiological functions in man and animals must not be overlooked. There is great need for repeated reviews of human symptoms as related to animal experiments with the hope that a satisfactory correlation will be evolved.

At present ovarian therapy is in a transitional stage. Advances in psychiatry have helped to explain the excellent psychotherapeutic effects of non-potent ovarian products. Potent preparations from the ovary and the anterior lobe-like substance from urine of pregnant women have given enough satisfactory results to justify further study. But, their manner of action and the dosage is by no means well established. In the meanwhile, much can be acomplished to correct disturbances of ovarian function by general measures to establish normal habits of living.

THE OFFICE TREATMENT OF PERNICIOUS ANEMIA WITH LIVER EXTRACT INTRAVENOUSLY AND INTRAMUSCULARLY

PAUL W. KNISKERN, M.D., GRAND RAPIDS, MICHIGAN, and
L. G. CHRISTIAN, M.D., LANSING, MICHIGAN

During the past year several workers have shown that liver extract is much more potent, gram for gram, when injected intravenously or intramuscularly than when given by mouth, in pernicious anemia. Since the discovery of the value of liver, and more recently stomach extract, in the treatment of pernicious anemia, a large number of papers have been published describing experiences with these substances. In nearly every case the author has attempted to arrive at a working formula of dosage and especially to establish a maintenance dose. It is our purpose not only to add further evidence of the potency of injected liver extract, but also to attack the problem of dosage from a different angle.

Castle and Taylor[4] first administered liver extract intravenously as a practicable form of therapy. They give priority, however, to M. Gansslen[7] for the injection of liver extract. His work was with intramuscular injections, both in pernicious and secondary anemias. Castle and Taylor brought about maximal reticulocyte responses and satisfactory remissions with as small a dose as the extract from 100 grams of liver given intravenously. Poole and Foster[9] produced a complete remission with intravenous liver extract in a patient who had had a gastrectomy and could not tolerate oral liver extract. William P. Murphy[8] has recently reported a series of thirty cases of pernicious anemia treated with intravenous and intramuscular liver extract, all showing good response. He suggests a maintenance dose of extract from 100 grams of liver injected at 5 to 20 day intervals, stating, however, that each patient must be studied as an individual problem. He also shows that injections of liver extract are less expensive to the patient than oral extract or liver. He favors intramuscular injection, as it causes less general reaction than the intravenous extracts that he used. Connery and Goldwater[5] treated 14 cases of pernicious anemia with intramuscular liver extract, obtaining prompt improvement. They recommend four initial treatments with extract from 100 grams, given at daily intervals, and weekly administration of the same dose for maintenance, stating, however, that smaller doses may be adequate. Wilkinson[6] reports the use of a highly purified liver extract for intravenous use which does not cause any reaction, such as blood-pressure lowering, chills, or fever.

This product was manufactured in England and is probably identical with one used in some of our cases.

Numerous other observers have reported the use of parenteral liver extract here and abroad, all showing uniformly good results, bringing about and early and complete remission with doses that amount to but a fraction of those necessary by mouth.

Methods and Materials Used.—The patients treated were all classical cases of pernicious anemia, all but one had some degree of postero-lateral sclerosis, and cell measurements showed the presence of macrocytes with a diameter of 11 microns or more. They received no treatment by mouth while receiving injections, except in one case which had failed to respond to treatment by mouth alone (Case 8). Reticulocyte counts were done in some cases, using brilliant cresyl blue on blood films, but daily counts were not possible as a rule, as the patients were not hospitalized. The chief criterion of improvement was the red count, usually done with two pipettes simultaneously for a check.

At first we prepared a solution of Lilly's 343 Liver Extract in water, one vial in 30 c.c., boiled and filtered. Later, material was furnished us by Armour and Company in 5 c.c. ampoules containing extract from 20 grams of liver and 1 c.c. ampoules of extract from 10 grams; by Evans and Company, Runcorn, England, in 5 c.c. ampoules of extract from 100 grams, highly purified, called Hepatex P. A. F.; by Lederle Company in 3 c.c. ampoules of extract from 100 grams of liver (for intramuscular use); and by Lilly in 10 c.c. bottles equivalent to 50 grams of liver. Treatments are recorded in terms of grams of fresh raw liver to which the injections are equivalent.

Case 1.—C. H., male, aged seventy-four, was first seen April 26, 1931, complaining of epileptiform attacks with diarrhea, loss of memory, unsteady gait, two to three years' duration. Family and past history were unimportant. Details of present illness were clouded by poor memory. Examination showed moderate pallor, general weakness and general arteriosclerosis, with no important objective findings in the heart, and a normal blood pressure. He had a positive Romberg sign, active knee reflexes, some disturbances of sensation in the legs and feet, and an ataxic gait. The blood count showed hemoglobin 60 per cent, red count 2.3 million, white count 6,000, marked poikilocytosis and anisocytosis, with macrocytes as large as 14 microns. The reticulocytes were less than 1 per cent. He was given six intravenous treatments with a solution of Lilly's liver extract 343 over a period of 53 days. The first treatment, 100 grams, was followed six days later by a reticulocyte response of 11.8 per cent. The second and third treatments were with 50 grams, the last three with 15 grams. The red count reached 5 million in 53 days.

He was not seen for three months, during which time his count fell again to 2.3 million. He was given 100 grams (Hepatex P.A.F.) intravenously, and his red count rose to 4 million in sixteen days.

This patient did not have further intravenous treatments or blood counts because of his lack of cooperation. He was greatly depressed and did not want to live, but he was given extract of 100 grams of liver by mouth three times a week. After two months he had a convulsion and died. A blood count shortly before death was 2.4 million.

The first three injections were followed by chills, fever, and vomiting. The smaller doses caused no reaction, but all injections of solutions of 343 liver extract were accompanied by flushing and a sensation of warmth. The Hepatex caused no flushing or chills.

Case 2.—R. L., female, aged sixty-nine, was first seen October 12, complaining of dizziness and poor memory. Her history from another physician was that he had first seen her three years before, when she had the same complaints and evidence of a moderate degree of postero-lateral sclerosis. He had seen her at irregular intervals for three years, during which time her neurological disturbance had remained about stationary and her red count had been in the 2- and 3-millions. She was then given five intravenous treatments in a six-month period without any reactions and with a red count consistently higher than in the period of oral treatment. Her case is tabulated as follows:

Date	*RBC Million*	*Hemoglobin*	*Treatment*
			Oral
11-19-28	1.5		150 gms. daily, in liver extract. Also eating small amounts liver.
1-26-29	2.5		
2- 9-29	2.68		
3-11-29	3.7		
4-23-29	3.0		Uncertain—forgetful.
11-19-30	2.16		
8-28-31			90 gms. daily 11 days.
10-12-31	3.8		
			Intravenous
10-12-31	3.8		100 gms. (Hepatex)
10-24-31	4.0		Eating small amounts liver.
11- 6-31	4.9		
1-20-32	3.7	13. gm.	20 gms. (Armour)
1-28-32	3.8	14.	100 gms. (Hepatex)
2-10-32	4.65	18.	(Stopped eating liver)
2-25-32	3.8	14.5	100 gms. (Hepatex)
4- 8-32	3.76	15.	100 gms. (Hepatex)

Case 3.—J. M., male, aged seventy, was first seen June 6, 1931, complaining of weakness. The past history was unimportant. Present illness dated back about six months; he had had attacks of diarrhea and gradually increasing weakness without other symptoms except a slightly unsteady gait. He was a fairly well nourished Hollander, with a pale subicteric complexion and moderate arteriosclerosis. The red count was 1.5 million, although he was able to travel some distance and walk into the office. The smear was typical of pernicious anemia. There were less than 1 per cent reticulocytes.

He was treated with small doses of solution of Lilly 343 liver extract, 15 gram injections intravenously twice a week for seven doses, then once weekly for five weeks. Another was given ten days later, and the last a month later. On the fifth day the reticulocytes rose to 5 per cent. Sixty days after treatment was started the red count was 4 million, and ten days later 4.9. He had no reactions.

Case 4.—F. H., male, aged sixty-eight, was first seen January 15, 1932. He complained of symptoms too numerous to record affecting all parts of the body, dizziness, nervousness, forgetfulness, and insomnia being the outstanding functional complaints.

He had a diarrhea and considerable loss of strength, and numbness and tingling of hands and feet. The past history and duration of present illness were vague—he said he had never been well. The examination showed slight pallor, undernutrition of moderate degree, numerous extra systoles, a normal blood pressure, and general arteriosclerosis.

His red count was 1.76 million, hemoglobin 9 grams per 100 c.c. The stained film showed the red cells typical of pernicious anemia. He was given 10 c.c. of Armour's liver extract, equivalent to 40 grams of liver, intravenously twice a week for seven doses. On two occasions (the third and fourth treatments) only 20 grams was given, but a slight fall in red count followed, so the dose was increased to 40 grams again. The reticulocytes rose from 0.5 to 2.9 per cent on the tenth day, but the peak may have been missed. Eighty-five days after treatment was started, the red count was 4.2 million, hemoglobin 14.5 grams. He had no reaction following treatment. The diarrhea promptly stopped and his strength improved, but the functional complaints continued.

Case 5.—A. J. M., male, aged forty-one, had a history of pernicious anemia for four years, with three serious relapses, and one period of a year in good health without treatment or liver, after the second relapse. He was first seen in April, 1931, when his red count was over 4.5 million. He had blood counts once or twice a month for five months without treatment or eating liver, during which time he felt well and had a normal count. On September 10, 1931, he complained of loss of sex power during the previous week, and said that this symptom had preceded other relapses. His red count was 3.3 million, and the smear showed many large macrocytes, poikilocytes, and microcytes. He was given 5 c.c. of Armour's extract, equivalent to 50 grams of liver, intravenously. The blood pressure just before treatment was 115/70, and immediately afterward was 108/70. His face was flushed during the injection, but he had no later reaction. The following day he was given a similar treatment. One week later, September 17, the red count was 4.4 million, and he felt considerably stronger, with a return of sex activity.

Date	*RBC Millions*	*Treatment*
9-10-31	3.3	50 gms. i.v. (Armour)
9-11-31		50 gms.
9-17-31	4.4	
10- 6-31	3.4	50 gms.
10-23-31	3.92	25 gms.
11- 6-31	4.3	20 gms.
12- 2-31	4.2	
1-14-32	4.3	
1-26-32	3.1	40 gms.
2-17-32	3.68	100 gms. i.v. (Hepatex)
3- 8-32	3.7	100 gms. i.m. (Lederle)
3-29-32	4.6	

This patient should have had slightly larger or more frequent treatments during this period, in view of the blood counts. He felt well, however, and was quite satisfied. He had a slightly ataxic gait, but was never handicapped by it unless he was quite anemic.

Case 6.—G. H., male, aged sixty, had been treated for four weeks with a domestic preparation of liver extract (Castle[3]) receiving extract from one-half pound of liver (240 gms.) daily. At the end of that time his blood count was: R.B.C. 2 million, Hb. 55 per cent, W.B.C. 3,500. He had a history of a relapse a year previously, which had been successfully treated by transfusion and liver extract. He was incapacitated by paralysis caused by postero-lateral sclerosis. A week after the above blood count, intramuscular treatment was started:

Date	*RBC*	*Hb*	*WBC*	*Treatment*
1-20-32	2.1	41%		5 gms. (1 c.c. Lilly)
1-30-32	2.2	55		intramuscularly
2- 6-32	2.9	65	3,000	daily for 35 days.
2-12-32	3.1	75	3,100	
2-18-32	3.19	82		
2-24-32	4.1	94	9,600	

Case 7.—M. K., female, aged sixty-six, was first seen March 1, 1932, with a chief complaint of weakness; also had vertigo, headache, tinnitus aurium, sleeplessness, anorexia, and diarrhea. She was well nourished, with the usual lemon-yellow pallor. There was tingling of hands and feet, with normal reflexes. Gastric analysis showed achylia gastrica. She was given intensive treatment as follows:

Date	*RBC*	*Hb*	*WBC*	*Treatment*
3- 1-32	1.1	32%	3,800	Transfusion 500 c.c.
3- 6-32	1.5	32	3,800	Transfusion 500 c.c.
3- 8-32				100 gm. i.m. (Lederle)
3-14-32				100 gm. i.m. (Lederle)
3-21-32	3.1	52		100 gm. i.m. (Lederle)
3-26-32	3.2	59		100 gm. i.m. (Lederle)
4- 2-32	3.9	64		100 gm. i.m. (Lederle)
4- 8-32	4.3	70		100 gm. i.m. (Lederle)

Case 8.—M. B., male, aged sixty-four, was first seen July 27, 1931, complaining of weakness and numbness. Thirteen years before, he had been diagnosed pernicious anemia during a similar attack, but recovered and felt well until four years before. Three years before, he had a relapse, from which he recovered by eating a pound of liver a day for some weeks. Then he felt well until nearly a year before his first visit. Since that time he had been up and down, with increasing numbness of hands and feet, gradually growing weaker. His examination showed him to be fairly well nourished, pale, very weak, with some peripheral arteriosclerosis. Reflexes were intact, the Romberg a doubtful positive. The blood count showed Hb. 26 per cent, R.B.C. 2.0 million, W.B.C. 4,250, with normal differential, and red cells showing marked anisocytosis and poikilocytosis.

He was given extract of 225 grams of liver daily for five days with a very slight rise in reticulocytes, and the red count fell below 1.5 million. In addition to oral extract, at the end of five days intramuscular treatment was started, giving 20 grams Armour extract daily, 2.5 c.c. in each buttock. The patient experienced practically no discomfort. Five days after starting the injections, the reticulocytes rose to 40 per cent. Treatments were given daily for ten days, then on alternate days for twenty-eight days, and the red count rose to 4 million thirty-four days after treatment was begun. The oral extract was given for twelve days. His count was followed for a month after the injections were stopped, and remained in the four millions. He was seen seven months later, at which time his count was 4.9 million, with hemoglobin 78 per cent. He stated that he had eaten liver "about once a week."

Case 9.—S. J., aged sixty-two. This case is of especial interest because we have the details of the treatment through two relapses, first with oral extract and second with intramuscular. The patient was first seen in September, 1929, with a history of weakness and gastro-intestinal upsets for the past year. He was a fairly well nourished man, acutely ill with marked pallor of skin. The examination was essentially negative excepting for pitting edema of the ankles; no sensory changes were found, and the reflexes were intact. The counts were as follows:

Date	RBC	Reticulocytes	Hb	WBC	Treatment
9-25-29	0.9		24%	2500	Transfusion 500 c.c.
9-27-29	1.1		30		240 gms. domestic
9-30-29	1.1	25%	30	5200	extract daily
10- 1-29					Transfusion 500 c.c.
10- 5-29	2.0	40	45		
10- 7-29	2.0	25	52	4000	Continuing extract
11-15-29	4.0		61	5300	daily
12-20-29	4.3		64		
3-26-30	5.5		90		

He was not seen again until December 7, 1931, when it was found that he had not been taking his liver extract regularly for a period of ten months because of difficulty in preparing it, especially during the hot summer months, and the taste had become noxious to him.

Date	RBC	Reticulocytes	Hb	WBC	Treatment
12- 7-31	1.5		30%	5300	100 gm. intramuscu-
12-12-31	1.6	5%	32		larly each visit
12-16-31	1.6	10	36		(5 c.c.)
12-19-31	2.0	25	39		
12-26-31	2.4		43		
1- 9-32	2.8		55		
1-15-32	3.6		60		
1-22-32	3.7		60		
1-29-32	3.9		66		
3- 4-32	5.4		80		
3-28-32	5.7		82		

COMMENT

The injection of liver extract is a highly efficient method of treatment of pernicious anemia. It should replace transfusions unless the patient is in extremis. It is especially valuable in cases with pathological or functional disorders of the gastro-intestinal tract which render uncertain the absorption of oral substances. It is useful for patients who object to oral preparations, and it can be made cheaper to the patient than treatment by mouth. The principal argument in favor of parenteral administration is the fact that liver extract is 30 to 50 times as potent when injected as when given by mouth. If the doses given to any of the above cited cases be added up, and compared to the amount of liver or extract given orally for a corresponding length of time in the average case, a very striking difference will be noted. With the increasing number of patients with primary anemia requiring treatment, this may be an important factor in making the supply of liver meet the demand.

Whether the extract is given intravenously or intramuscularly does not matter, so far as effectiveness is concerned. With the products made in this country it is difficult to give enough intravenously without causing reactions, unless frequent small injections are used. The highly purified English product overcomes this difficulty. The new concentrated extract brought out recently by Lederle may be given intramuscularly with very little local reaction.

Dosage.—With our increasing knowledge of substances effective in the treatment of primary anemia we are tending more and more toward a mathematical attitude in our therapy. Riddle[10] has an arithmetical formula for predicting the reticulocyte response to treatment at any red-cell level, and it seems probable that most patients will respond to uniform doses in a uniform fashion when they are in relapse. Many authorities have gone farther and outlined doses for remission as well as relapse. Wilkinson[12] recommends 1 to 1.5 ounces of desiccated hog stomach for relapse and ¾ ounce daily for maintenance. Connor[6] advises 120 to 240 grams of stomach mucosa or its dried equivalent daily. Beebe and Lewis[1] give more leeway by dividing all patients into four groups according to severity and complications, the first group requiring the equivalent of 100 to 400 grams of liver daily, the other groups progressively more. Sturgis[11] recommends 5 to 6 vials of liver extract daily, or 10 grams of ventriculin daily for each million red count deficit until the count is normal, and for maintenance one-fourth pound of liver or 1 vial of liver extract three or four times weekly, or 1 vial of ventriculin daily.

These dicta do not take into account the spontaneous remissions that take place in pernicious anemia. Remissions and relapses were more apparent before liver therapy was discovered. Cabot[2] in analyzing 524 cases found that 296 had one complete remission, 118 had two remissions, 65 had three, 21 had four, 24 had five, lasting from three months to four years. He stated that six patients recovered completely. It seems doubtful whether we should treat patients during a remission beyond advising them to eat liver as frequently as they can conveniently, for we cannot assure them that they will not have a relapse unless we give them frequent injections or large amounts by mouth.

We have attempted to arrive at adequate dosage for relapses by two methods—minimal and maximal, frequent and infrequent intervals. In one case (Case 7) 100 grams was given intramuscularly at seven-day intervals for six doses, the count rising from 1.1 to 4.3 million in thirty-nine days. In Case 1, two 100-gram doses were given intravenously at thirty-day intervals, the count rising from 2.3 to 4.2 million in thirty-nine

days. So to date we are unable to draw any definite conclusions as to the minimal dosage required to bring about the maximal regeneration of the blood.

The answer to the problem of dosage seems to us to be found in making every patient an individual case. The situation is somewhat analogous to that found in diabetics, except that in pernicious anemia not only is every patient's requirement different from that of every other patient, but his needs for treatment fluctuate very markedly from time to time. Moreover, besides the rhythm of the disease we must consider the age of the patient, other conditions present, and even his social and mental status. There is little evidence that treatment improves spinal cord changes, but where symptoms are present we should be especially careful to keep the blood up to normal in an attempt to arrest the combined sclerosis.

It is impossible to treat pernicious anemia rationally without frequent blood counts. Patients and physicians must not forget that this is essentially a malignant disease, that it is still a frequent cause of death, and every effort must be made to keep patients under observation. It is hoped that the use of parenteral liver extract will help us to do so.

SUMMARY AND CONCLUSIONS

1. Nine cases of pernicious anemia treated with parenteral liver extract are presented.

2. Five were treated intravenously, four intramuscularly. All showed good response in blood regeneration. The two routes were not compared by giving identical doses, but the extract seems to be approximately as active when given either way.

3. No real improvement in cord symptoms was demonstrated. Neither was there any progression while under treatment.

4. In two cases (Cases 6 and 8) there was rapid response to intramuscular treatment after moderate oral doses of extract had failed.

5. Treatment during remissions should be an individual problem in each case. Large or frequent treatments are not as a rule necessary, but every patient should have frequent blood counts.

6. Injection treatments are advocated because the active principle of liver extract is much more potent than when given by mouth, because the treatment is more accurate than oral administration, and because it tends to keep the patient in closer touch with the physician.

Experience since these cases were treated has led us to concur with other writers in feeling that the aim of treatment should be to maintain a five-million red count, and that this can usually be accomplished with injections equivalent to 100 grams every three to four weeks.

BIBLIOGRAPHY

1. Beebe and Lewis: Am. Jour. Med. Sc. (June), 1931.
2. Cabot: Principles and Practice of Medicine. Osler and McRae, 8th edition, p. 738.
3. Castle and Bowie: Jour. A. M. A., 92:1830, 1928.
4. Castle and Taylor: Jour. A. M. A., 96:1198 (Apr. 11), 1931.
5. Connery and Goldwater: Jour. A. M. A., 98:1060 (Mar. 26), 1932.
6. Connor: Jour. A. M. A., 96:500 (Feb. 14), 1931.
7. Gansslen, M.: Klin. Wchnschr., 9:2099 (Nov. 8), 1930.
8. Murphy, Wm. P.: Jour. A. M. A., 98:1051 (Mar. 26), 1932.
9. Poole and Foster: Jour. A. M. A., 96:2187 (June 27), 1931.
10. Riddle: Arch. Int. Med., (Sept.), 1930.
11. Sturgis: Address—Mich. State Med. Convention (Sept. 24), 1931.
12. Wilkinson: Jour. A. M. A., 96:1634 (May 9), 1931.
13. Wilkinson: Lancet, 2:791 (Oct. 10), 1931.

COLPECTOMY

Harold E. Simon, Birmingham, Ala., gives the following indications for colpectomy: 1. Prolapse in the aged constitutes the most frequent indication for colpectomy. In old and debilitated women in whom a short intervention under local anesthesia alone is feasible, this operation offers a maximum chance for cure with little or no risk. 2. After hysterectomy the recurrence of prolapse with cystocele or rectocele, or both, is tremendously difficult to treat, especially in older patients, or, when other perineal operations have been performed unsuccessfully previous to hysterectomy, the anatomic structures are so distorted and inadequate that any operation less certain than colpectomy to result in cure would be inadvisable. 3. Recurrences after the Watkins-Wertheim interposition operation for prolapse and cystocele may sometimes be best handled by hysterectomy and colpectomy. 4. When vaginal hernia recurs after hysterectomy, when intra-abdominal operations are contraindicated owing to the age of the patient or for other reasons and the hernial defect is too great to be repaired by conservative vaginal procedures, or when the hernia is large and is a part of an extensive prolapse, total or partial colpectomy after ligation of the sac is often the procedure of choice or the only alternative that offers a reasonable prospect of cure. 5. When vaginal hysterectomy is performed for prolapse and efficient reconstruction of the perineum is impossible and if there is insufficient contraindication to vaginal obliteration, colpectomy as an adjunct is preferable to a perineal reconstruction which would offer little prospect of permanent cure. 6. When effective repair cannot be accomplished in prolapse in nulliparous women or after the failure of conservative surgical procedures, colpectomy may be necessary. 7. Modern methods of handling intractable vesicovaginal fistulas preclude the necessity for colpectomy. 8. In vaginal neoplasm when its surgical treatment involves an extensive denudation of the vagina, complete or partial colpectomy may be useful.—*Journal A. M. A.*

FUNCTIONAL DISORDERS OF THE COLON*

ELMER L. EGGLESTON, M.D.
The Battle Creek Sanitarium
BATTLE CREEK, MICHIGAN

The organic disturbances of the colon—new growths, different types of ulcerative colitis, catarrhal or infective colitis, appendicitis, and obstructive lesions other than those coming under the head of new growths—are reasonably sure of diagnosis by our present day methods and need not be confused with those functional disorders of the large bowel, which drive those so afflicted from one physician to another and all too frequently into the hands of the irregular practitioner or food faddist.

Aside from the organic causes of colon disturbances which are not treated in this paper, probably the most common cause of functional disorders of the colon is the spastic or irritable colon. There are no symptoms of inflammation of the mucosa with this condition and if a pathological examination were made, no abnormality or pathological lesion of the colon could be discovered; nevertheless, it is probably the most troublesome type of colon trouble to relieve that we encounter, as the causes are numerous and usually located outside the colon itself. I do not wish to treat the condition as a pathological entity but rather as the source of abdominal pain which is frequently so disturbing to the patient.

The literature on the subject has naturally been on the increase and contains discussions by the following authors: Hurst,[4] among others, calls attention to the fact that a diagnosis of colitis is often made to explain functional symptoms, and that much time and money are spent on vaccines, intestinal douches and visits to spas, when nothing more than "a little judicious psychotherapy" is needed. He further states that the condition badly described as muco-membranous colitis is analogous with asthma—just as over-activity of the vagus leads to spasm of the bronchial muscles and excessive secretion of mucus by the bronchial mucous membrane, so "muco-membranous colitis, as it should be called, may be complicated by a mild form of true colitis as a result of daily irritation by injudicious local treatment."

Ryle[8] observes that the variety of colonic pain found in the spastic colon is a function of the musculature of the visceral wall, and depends in part upon an inherent neuromuscular irritability associated with particular constitutional types; that aggravating factors include cold, fatigue, worry, constipation, purgatives, exercise and tobacco. He concludes that spastic colon must be included in the category of "visceral neuroses," because of its association with certain physical and psychological types, its intermittent behavior, its aggravation by circumstances which depress or harass the higher centers, and the absence of all evidence of an associated organic lesion.

Eve,[2] under the analogy of traffic regulation, attempts to simplify and give a working conception of the protean disorder of chronic abdominal pain occurring intermittently. The variety of the pain depends upon the sphincter or sphincters in fault which are compared with traffic "robots" that get stuck at red, so that the traffic is obstructed and pain results.

Kruse[7] regards the psychological or nervous factor, and physical fatigue as the "two great essentials" in this condition, stating that these patients must be taught that they can obtain relief by acquiring the proper mental balance and right psychological attitude toward their problems. Clark[1] believes that the commonest cause of the irritable colon is worry, and its prevalence is due to the fact that few people are immune from the worry habit. He says: "It is our custom to head every record of advice to the patient following the diagnosis of this disease, with the words, Avoid worry; break hurry habits."

Kantor[6] introduces the term "unstable colon" in preference to "irritable" colon, to emphasize the fact that the same colon may show at various times, or in various parts at the same time, delay or hypermotility, atony or spasm. This term includes both the irritable and sluggish types, as well as the syndrome of alternating constipation and diarrhea. He concludes that the nervous causes

*Read before the section on Internal Medicine, Michigan State Medical Society, Grand Rapids, September 13, 1933.

of colonic instability probably include disturbances of the psychic sphere as well as imbalance of the autonomic system. The diagnosis of colonic instability is readily made by the x-ray nine-hour observation.

Jordan[5] writes on the relation of neurosis to the unstable colon and states that the fundamental factor in the condition is "an imbalance between the nervous and the muscular apparatus of the colon which results in a disturbance in its mechanical, and, to a lesser degree, its secretory functions, an imbalance that comes to the consciousness of the individual by various symptoms." Hunter[3] considers that the general nervous make-up of the patient is the prominent factor in spastic colitis, the colon merely bearing the brunt of the nervous instability.

There are numerous factors in the causation of the condition diagnosed as spastic colon. Primarily it is a symptom of an unstable nervous condition, an imbalance of the parasympathetics and sympathetics in the innervation of the colon. With an over-stimulation of the parasympathetics, we are apt to have a rapid emptying of the stomach and small intestine, and also of the colon. On the other hand, we frequently observe a chronic spasm of the distal colon or at least of the pelvic colon, with a resulting constipation. With an over-stimulation of the sympathetics we may have just the opposite condition, megacolon.

In the greater number of cases the patient is ignorant of the specific cause of his colon malfunction. It may follow some infection that leaves him in a weakened condition—many date their chronic illness or indisposition to an attack of flu or some similar disorder; or it may be the sequela of mental shock—the death of a member of the family, or some domestic or financial problem. It may be a concomitant of a definite organic disorder of some other part of the gastro-intestinal tract, or some more distant organ. It is practically always present in physical disorders where there is introspection and anxiety on the part of the patient. It is questionable if a toxemia is responsible for this type of colon dysfunction.

The age incidence is interesting. The very young and very old are apparently immune, while the third and fourth decades of life are more definitely afflicted, the average age being 40 years. There is a definite familial tendency. It is frequently found in those of higher education but is uncommon among the lower social classes, or the negro. It is more prevalent among women than men, probably in the proportion of 60 to 40. Women, confined to their homes with little diversion, are more prone to introspection, and a disturbed bowel function frequently becomes a phobia. The visceroptotic or physically unfit individual is prone to develop this condition. Were it limited to these groups only, it would not of so great importance, but since it seems to be increasing in frequency and is often a definite factor in causing physical incapacity, it demands more attention than it has hitherto received.

The outstanding symptom of a functionally disturbed colon is abdominal pain, often associated with tenderness along some portion of the colon, usually the pelvic colon. Because of pain and tenderness in the right lower quadrant, the appendix is too frequently condemned, although at operation it is found free from pathology and the symptoms persist, possibly in a more acute form, following appendectomy. The patient may be unable to definitely locate the pain, referring it at times to the lower abdomen and at other times to the epigastrium. In some cases the pain is complained of only early in the morning and may be relieved when the bowels are evacuated; in other cases it simulates the pain of peptic ulcer and biliary tract disorders.

Constipation is the next symptom in order of frequency and may be so severe at times as to amount to obstipation. The caliber of the stool is practically always abnormal—lead-pencil or ribbon-like stools, scybala, or entirely unformed. The abdominal pain and discomfort are always aggravated by the use of cathartics. An excess of intestinal gas is practically always complained of and when the fecal mass is held in the distal colon, the absorption of gas seems to be lessened; hence, with an increased amount of gas in the lower bowel there is much greater discomfort. This can be definitely demonstrated by the use of a small enema which relieves an accumulation of feces in the rectum with complete relief of the gas for a time. Accompanying these abdominal symptoms there are numerous general symptoms such as nausea, asthenia, headache, lack of appetite, insomnia, etc. There are few conditions with so profuse symptoms as the spastic colon.

On physical examination the patient may exhibit a perfectly normal nutrition but in many cases the nutrition is below par inasmuch as the patient fears an aggravation of his symptoms if he takes sufficient food to maintain nutritive equilibrium. Examination of the abdomen reveals a palpable, sensitive pelvic colon—at times so sensitive that even light clothing causes marked discomfort—and frequently the cecum and ascending colon are involved, the whole colon being exquisitely tender. The sensitiveness may exist for a few days or it may persist for months. The cecum and ascending colon may also be contracted, but in my experience at least in all the chronic cases, it is dilated, probably the result of the chronic stasis due to the contracted pelvic colon. Practically all of these patients complain of a sense of abdominal distention even when it is impossible to determine an excess of gas, and whether this is due to definite distension or to a tense gut distended by feces, or to an abnormal sensitiveness, is a question. The passing of gas practically always gives temporary relief of the acute pain and distension. Constipation is the rule but there may be alternating constipation and diarrhea. In the majority of cases, no excess of mucus is noted but that the so-called mucous colitis is only a more aggravated form of the spastic colon is held by many authorities today.

There may be difficulty in arriving at a specific diagnosis. Keeping in mind the above mentioned symptoms, many of them so frequently associated with definite organic disease, it is often a question whether a specific diagnosis is permissible. A diagnosis of an intestinal neurosis would probably be more plausible. A functional colon trouble should not be diagnosed until the patient has been subjected to a thorough study, as there is danger of overlooking a diverticulosis or diverticulitis of the pelvic colon, or a malignancy at some other location, or some rare pathology of the omentum.

There has been a great advance in our knowledge of abdominal pathology requiring surgical intervention, but even yet the number of patients observed in large clinics, exhibiting a right lower quadrant scar without relief of symptoms, would indicate that we have not yet found it possible to differentiate between the spastic colon and the so-called chronic appendix, diseased gall bladder, or diseased pelvic organs. Less haste in exploring the abdomen might frequently relieve both the surgeon and internist of embarrassment although I do not wish to condemn legitimate abdominal surgery. There is just as great danger in overlooking an organic lesion and making a diagnosis of a functional trouble, as is illustrated by the following cases which I have recently observed:

Case 1.—This patient, a man aged fifty-six, had complained of rather severe abdominal symptoms for three months. The pain was not unduly severe; at times it was cramping in character and at times there was a tendency to nausea. He was not obstinately constipated and stool was negative for blood and mucus. His appetite was very poor and he had lost twenty-five pounds in weight over a period of three months. He had been carefully studied and observed. The results of an x-ray series were not conclusive of an organic lesion and in the absence of definite organic findings a diagnosis of a functional disturbance or spastic colon was indicated. He did not respond to treatment and was later referred to the surgeon. At operation it was found that he was afflicted with a primary endothelioma of the omentum. It is very doubtful if a correct diagnosis was possible in this case without surgical exploration, and we should recognize that at times we may be unable to arrive at a positive and accurate diagnosis without the aid of the surgeon.

Case 2.—The diagnosis in this case was not so obscure. A man of about 45 years of age gave a history of a severe attack of diarrhea about a year previously, which came on suddenly and confined him to his bed for four or five days. Following the diarrhea he exhibited constipation with a great deal of intestinal gas. His physician made a diagnosis of colitis and treated him accordingly for a number of months. At the time he came under our observation, he was having several small loose stools daily; was very weak and had lost some thirty-five pounds in weight. Two x-ray series of the gastro-intestinal tract had been made with a resulting diagnosis of spastic colon. The patient had supposedly had the best possible medical care, but apparently a very simple procedure had been overlooked. Our routine proctoscopic examination revealed a ring obstruction at the recto-sigmoid junction. Our x-ray series, made a few weeks after the preceding one, showed a lower sigmoid lesion with marked stasis. The diarrhea was apparently an effort on the part of the body to relieve the colon of excessive retention incident to the obstruction. In this case a diagnosis of a functional trouble very greatly lessened the patient's chance of complete recovery following surgical intervention. A patient exhibiting symptoms of colon dysfunction has not been properly studied without a proctoscopic examination. Inflamed hemorrhoids, cryptitis, and chronic rectal ulcers may reflexly cause a spasm of the sigmoid and are very disturbing to intestinal function. A malignancy in the lower sigmoid or lower rectum can often be promptly diagnosed by digital examination.

The prevalence of amebiasis due to infestation of the endameba histolytica further complicates our ability to make a correct diagnosis. A few weeks ago a man about forty years of age came to us stating that he had been experiencing a gastro-intestinal disturbance for some months. He had lost some fifteen pounds in weight; at times would have three or four loose stools during the day and had noticed a little blood in some of the stools. He had gone through the hands of several physicians who had

made a diagnosis of a functional intestinal disturbance. Our examination of the warm stool specimen revealed the presence of many endameba histolytica, which definitely classified this as an organic colitis, ulcerative in character, secondary to the ameba infestation. Recent observations would indicate that amebic infection is much more general than we had previously supposed and it behooves us to be extremely careful in all examinations of patients with apparent functional colon disturbances lest we overlook this important finding.

It is essential that we recognize the rôle of the spastic colon as a cause of certain abdominal symptoms but we must not forget that it is in itself a functional disturbance secondary to a vagotonia and may be associated with definite organic trouble. Before making a diagnosis of a functional intestinal disturbance or a spastic colon, we should keep in mind that a very careful history is of the greatest importance, following which an orderly examination is imperative. A complete x-ray series of the gastro-intestinal tract, or at least a barium enema, is necessary to distinguish between functional and organic trouble. Furthermore, a careful examination of the feces is indicated; not a simple routine examination but a thorough study of the warm stool. Where the symptoms have persisted for a long time, months or years, and where careful and complete examinations do not warrant a diagnosis of organic trouble, we may be correct in making a diagnosis of an intestinal neurosis, or, in more specific terms, a spastic or irritable colon.

The therapy for a functional colon disturbance must of necessity vary more or less with each individual case and probably should be classed as symptomatic treatment. The first decision to be made is whether the patient should be treated in the home or in an institution. It is much more difficult to accomplish a cure in the home as the surroundings are apt to be unfavorable—improper food, no opportunity for relaxation, lack of sympathy, and criticism from members of the family, or an excess of sympathy, either condition tending to encourage the introspection and anxiety on the part of the patient. There are many advantages in institutional treatment: The daily program can be so arranged that the patient can be reasonably active without danger of overfatigue; the diet can be prescribed and supervised; certain physical measures—hydrotherapy, massage—and pleasant diversions in the form of light games which enlist the patient's interest are invaluable. We must keep in mind that the principal cause of the disturbance is no doubt an unstable nervous condition and if we treat the colon rather than the patient, we will probably fail in our efforts. He must be relieved of his fears, anxiety and introspection. Re-education along many lines is necessary in some, while others have only to be reassured relative to a feared organic condition; still others need domestic adjustments, and a great many, financial assistance.

The relief of the constipation attending these cases calls for real skill and patience. The use of cathartics has been found to be of little real value and may result in definite injury with an aggravation of the pain and tenderness which is so distressing in these cases. Bulky lubricants are usually well borne and are of definite value; agar emulsified with mineral oil, psyllium seed or the psyllium jelly have been of value in my hands. There are many preparations of this character on the market and there should be little difficulty in making a choice, though I would call attention to the fact that oil and agar preparations containing laxatives such as phenolphthalein are to be definitely condemned. The oil enema is of great value in encouraging a morning movement and should be tried in all severe cases. The colon irrigation has its advocates but in the spastic type I have found it to be of little value as a curative factor. Enemas at a temperature of 108-110° may tend to relax the enterospasm and may be used for temporary relief. Massage of the pelvic colon has not been found particularly valuable.

Diet is of great importance as the majority of these cases tend to develop malnutrition and secondary anemia of a mild type; therefore, a liberal bland diet of a high vitamin content is desirable. I emphasize a *bland diet* as many cases will not tolerate a diet of too much roughage. A normal individual may be helped by roughage but this is not the case with the patient suffering from a spastic colon or the so-called mucous colitis. I appreciate that this is a controversial point, but my experience is that a bland diet is imperative. The milk diet is very beneficial in cases where the weight is subnormal—beginning with three quarts of milk daily and gradually increasing up to six quarts, adding one or two drachms of milk sugar to each glass of milk. This is a convenient way to force-feed the patient, and when he is taking six quarts of milk,

with the added content of lactose, a gain in weight of from two to four pounds per week is noted. This regime practically always relieves the constipation and the lactose tends to change the intestinal flora, which may be advantageous. Should the bowels become too loose, the lactose may be reduced or dispensed with entirely. Hydrotherapy is of great value both as a tonic measure and as a means of relieving the abdominal pain. Diathermy applied to the pelvic colon may also be used advantageously.

Permit me to call your attention to the danger of over-emphasizing any particular form of treatment, lest the patient develop a neurosis along this line. These patients are inclined to "live for their bowels" and every effort must be made to interest them in other matters.

CONCLUSIONS

In considering functional disturbances of the colon, let us keep in mind that they may be the result of a variety of causes. They are more frequently found when no pathology of the gastro-intestinal tract can be discovered, but on the contrary they may be a concomitant of some definite pathology either in the digestive tract or some neighboring organ.

It is unwise to make a diagnosis of a functional intestinal disturbance or a spastic colon without such information as can be ascertained by a careful history, x-ray series of the gastro-intestinal tract or at least a barium enema, proctoscopic examination, and careful study of the warm stools.

The patient may develop a neurosis on the basis of a colon dysfunction which is apt to be an insurmountable barrier in providing permanent relief of his symptoms. While proper measures must be used for temporary relief of the distressing symptoms, we must recognize the necessity for relieving the anxiety and colon-consciousness of the patient; otherwise, he will promptly relapse into his former condition when he attempts to assume his normal life and plan his own program.

The great majority of these cases can be relieved, and the profession has a responsibility in this matter which they cannot disregard. It is not enough to classify the individual as a neurotic and lose interest in his welfare. He may find an irregular practitioner who is not too busy to listen to him and, by re-educating him along rational lines of living, may relieve his symptoms and restore him to a useful life.

REFERENCES

1. Clark, S. K.: The irritable or functional colon. Canad. Jour. Med. & Surg., 71:82 (April), 1932.
2. Eve, F. C.: Disordered regulation of traffic in the gut. Brit. Med Jour., p. 364 (March 4), 1933.
3. Hunter, C.: Spastic colon. Canad. Med. Assn. Jour., 26:151 (Feb.), 1932.
4. Hurst, A. F.: The diagnosis and treatment of colitis. Proc. Roy. Soc. Med., 20:367 (Feb.), 1927.
5. Jordan, S. M.: The unstable colon and neurosis. Jour. A. M. A., 99:2235 (Dec. 31), 1932.
6. Kantor, J. L.: The unstable colon. Southern Med. Jour., 25:29 (Jan.), 1932.
7. Kruse, F. H.: Functional disorders of the colon. California & West. Med. (Aug.), 1933.
8. Ryle, J. A.: Observations on colonic pain. Guy's Hosp. Rep.: 79395 (Oct.), 1929. Chronic spasmodic affections of the colon. Lancet, 215:1115 (Dec. 1), 1928. The study of symptoms. Lancet, 220:737 (April 4), 1931.

THE IMPORTANCE OF INTRODUCING PSYCHIATRY INTO THE GENERAL INTERNSHIP

Franklin G. Ebaugh, Denver, believes that psychiatry should be represented in the general internship as part of the basic preparation for the practice of medicine. Such participation of psychiatry in straight, rotating and mixed internships is now possible in most hospitals through: (1) combined clerkships and internships and service in state hospitals during the summer months, (2) active psychiatric consultation service in both ward and outpatient departments, (3) liaison work between the various departments, especially with medicine and pediatrics and (4) the allotment of definite time for psychiatry, preferably from two to four months in rotating schedules. There should be greater utilization of the well equipped psychopathic and state hospitals, whereby affiliated schedules can be developed for intern training. At the present time less than one fourth of the 7,357 interns now in training have the benefit of psychiatric training. In general, these psychiatric services are well appreciated by the intern and accepted by the staff and administrators of these hospitals as an essential part of the basic training. Psychiatric training in the future should be considered as a requirement for licensure. This will be a great educational step forward in protecting the public from the quack and further emphasizing the importance of the psychologic aspect of all medicine as well as furthering greater cohesion and correlation between the various fields of medicine. Introducing psychiatry through the general internship will be a great impetus to the changes now taking place in undergraduate and graduate psychiatric teaching schedules. It should play a rôle in breaking down the tendency for immature specialization in various fields and in the acceptance of psychiatry as a fundamental phase of all medicine.—*Journal A. M. A.* (March 31, 1934).

OPERATIONS ON THE ORBIT*

WILLIAM L. BENEDICT, M.D.†
Section on Ophthalmology, The Mayo Clinic
ROCHESTER, MINNESOTA

For the satisfactory performance of surgical operation about the orbit, attention must be directed to preservation of structures that do not need to be disturbed. The eyelids, together with the contents of the orbit, frequently are involved in pathologic changes that require surgical correction. Whereas the primary object of the operation may be removal of pathologic material, the avoidance of postoperative disfigurement and protection of adjacent organs may be very important. Eyelids that will open and close at will are necessary for the protection of a seeing eye, and every precaution should be observed against injury to the muscles of the lid and the ligaments in performing external operations on the sinuses or the deep orbital structures. Severe contractions often follow deep laceration or incisions producing disfigurement of the upper part of the face and annoying interference with seeing. These may be unavoidable if accidental mutilation has occurred, but should be avoided in surgical operation if careful planning of the procedure makes it possible.

The human orbit is remarkably uniform in size and shape after the age of fifteen years. The rim of the orbit is well formed at birth and provides protection to the eyes from pressure normal to delivery. During the first twelve years of life, the orbital outlet increases somewhat in size, and the rim assumes more solidity while the bones of the face are growing and the nasal accessory sinuses are developing.

The direction of the axes of the orbit changes during the entire growth period, and the orbits become further separated from each other by development of the ethmoid bones. In infancy the axes lie at an angle of about 115 degrees, the orbits looking laterally, although the eyes are situated close together due to the proximity of the medial orbital walls. The angle of the axes in the adult approaches 45 degrees, and the orbits look more nearly forward, the interpupillary distance having increased in proportion to the separation of the medial walls by growth of the ethmoid bones and the width of general facial development. The bony walls of the orbit are well formed in early youth. The paper plate of the medial wall is only semirigid and yields to pressure, whereas the other walls soon become completely rigid and fixed in relation to one another. Frequently in aged patients, dehiscences from absorption occur in the roof of the orbit, leaving the periorbita in contact with the dura. This relation is of significance in exenteration of the orbit for any cause, and may explain the occurrence of meningitis or abscess of the brain in some suppurative diseases of the sinus accompanied by orbital periostitis or cellulitis.

Ethmoidal dehiscences are common, but the periorbita provides a barrier to the spread of infection and the lack of a complete bony wall is not of serious significance. Operations on the orbit by approach through the superior, nasal and inferior walls are rarely done, so the surgical significance of contour and consistence is negligible from that standpoint. Certain landmarks, however, are useful in orientation when gross pathologic changes produce marked distortion of the soft parts of the upper portion of the face.

The surgical anatomy of the orbit determines methods of operating for abscess, tumor or cyst; for repair of fractures, lacerations, or deformities, and for placement of prosthesis for cosmetic effect. The rim of the orbit is the outstanding landmark, and to it is attached the periorbita and the anterior extension of the fascial sheaths of connective tissue, and of Tenon's capsule. Posterior to the rim the orbit has a nonyielding wall of bone lined with periosteum, perforated by nerves and blood vessels that are somewhat protected from pressure by being situated in fissures or sinuses covered by semi-elastic membranes. Anterior to the rim, the fascial ligament, the globe and lid form an elastic and distensible wall, capable of considerable resistance, even in case of

*Read before the Michigan State Medical Society, Grand Rapids, Michigan, September 12 to 14, 1933.

†Dr. William L. Benedict received his M.D. degree in 1912 from the University of Michigan. He is head of the Section on Ophthalmology, The Mayo Clinic; Professor of Ophthalmology, The Mayo Foundation for Medical Education and Research, Graduate School, University of Minnesota, and a Fellow of the American College of Surgeons.

paralysis of the orbicularis muscle, to pressure from behind such as occurs in cellulitis, abscess and tumor. The periorbita is, for the most part, easily detachable so that there is a potential space between it and the bone. It is firmly attached at the rim of the orbit, where it becomes continuous with the periosteum covering the bones of the face. At the apex it is closely adherent to the sheaths and upper part of the optic nerves. It is firmly fixed at the lacrimal fossa, the sutures and various fissures and foramina.

Subperiosteal abscess may occur at any place along the orbital wall, but the situation of the abscess may not be identical with that of the initial lesion. The most common cause of subperiosteal abscess is periostitis about the margin of the orbit, and disease of the paranasal sinuses. Abscesses situated anteriorly cause swelling near the morbid process and are easily drained by incision through the lids at the most dependent portion. Posterior abscesses, however, are more likely to be formed where there is the greatest distensible subperiosteal space; that is, along the superior and nasal walls. The globe is protruded forward and usually is immobile; the lids are swollen and cannot be opened; the conjunctiva is chemotic and protrudes between the lids. The pus spreads diffusely behind the rim, producing marked bulging of all the soft tissues and the globe. In cases of frank sinus disease, an intranasal operation may evacuate the pus, but this is not always possible. It then becomes necessary to drain the pus through an incision into the orbit. The point to make the incision is just beneath the brow, through the lid, to the rim of the orbit, lateral to the supra-orbital notch. The incision should be parallel with the orbital margin and large enough to permit instrumental exploration of the cavity of the abscess. The advantages of making the incision at this point are: (1) The wall of the abscess cavity lies nearest the surface at the upper rim, and maximal facilities for drainage are present; (2) there are no important nerves, vessels, or ligaments to be cut; (3) after healing there will be a minimal amount of deformity from contraction of the scar, and (4) the globe and soft tissues of the orbit are least exposed to infection through contamination.

Inside the periorbita is the space bounded by the cone of muscles, the intermuscular membrane and the capsule of Tenon. Abscesses within the cone or between the cone and the periorbita are more easily evacuated by incisions through the conjunctiva, and may be missed by exploration through an incision as described for extraperiorbital abscess. Exploration of the orbit in sinus disease in children, when there is marked proptosis and swelling of the conjunctiva and lids, is notoriously futile. Cellulitis from a small lesion is often proportionally greater than in the adult. The sinuses in children are quite small or undeveloped, the walls thin, and the soft tissues of the orbit nearer the source of inflammation. The orbit is shallow and the outlet large, factors which permit distention with little injury. As a rule, cellulitis in children should be treated expectantly, and exploration deferred until abscess formation is quite evident and definite signs of pointing appear. Incision through the lower lid should always be avoided if possible in children as well as adults, because of the subsequent deformity due to scars which become adherent to the lower rim of the orbit, pulling the lid downward and fixing it against normal mobility.

The main blood supply to the orbit is provided by the ophthalmic artery and its branches, many of which anastomose freely with other vessels from the internal and external carotid arteries. Arteriovenous aneurysm occurs at the cavernous sinus, giving rise to passive congestion of the orbit and distention of the eyelids. Cavernous hemangiomas of the orbit sometimes cause swelling and congestion similar to that produced by aneurysm, and may so closely simulate that condition that differentiation is difficult. Due to the abundant blood supply, most of the soft tumors of the orbit are well nourished and many of them grow rather rapidly. The blood vessels that supply these tumors may become large enough to carry a distinct pulsation, thus more closely simulating aneurysm by producing thrill and bruit. The most common extrabulbar tumor of the orbit, some form of hemangioma, may become one of the most difficult to diagnose and to remove. When determination of the extent and character of a highly vascular orbital tumor is doubtful, preliminary ligation of the internal carotid artery provides a factor of safety for orbital exploration that should not be ignored. If ligation is not done as a preliminary measure, and should uncontrollable hemorrhage be encountered, one should be prepared to ligate one or both carotid arteries.

Tumors of the orbit may be primary in the soft tissues of the orbit; secondary tumors invade the orbit from adjacent regions, such as epitheliomas primary in the lids, tumors arising in the nasal accessory sinuses, or metastatic, blood or lymph-borne tumors from primary neoplasms elsewhere. There is a wide variety of primary tumors, the most common being hemangiomas, sarcomas, and carcinomas. The more malignant, invasive type usually grow rapidly and require radical treatment. Exenteration of the orbit followed by radium usually is effective if done before the disease extends beyond the walls of the orbit. Exenteration of the orbit may be total or subtotal, depending on the extent of involvement of the lids. If the lids are involved, as in primary carcinoma which has invaded the orbit, the excised tissue should include the lids and a margin of healthy tissue about 1 cm. beyond the apparent margin of the tumor. The periorbita should be elevated in the rim of the orbit and the entire content of the orbit removed as cleanly as possible. If the lids are not involved, the skin should be preserved to be reflected back on the orbital walls, but the margins of the lids, tarsal plates and conjunctiva should be taken away with the content of the orbit. Incision should be made through the skin at the margin of the lids, and the skin dissected back beyond the tarsus. The tarsal plate, margin of the lid, and cilia cannot be used for plastic repair after exenteration and must be sacrificed. After exenteration for malignancy, the orbit should be kept loosely packed with vaseline-iodoform gauze and the walls allowed to granulate for several weeks before an attempt is made to cover the granulated surface with skin flaps. If the medial wall has been perforated, openings into the nasal cavity will be permanently lined with extension of the nasal mucous membrane, over which skin grafts can be placed only with difficulty.

Most of the tumors of the orbit, however, particularly the primary ones, are innocent growths that push the tissue aside and are usually encapsulated. The character of the tumor will depend on the tissue of origin, but its situation within the orbit frequently is determined by the path of least resistance. Tumors of the optic nerve and its sheath are, of necessity, confined to the posterior portion of the orbit and seldom protrude far enough forward to be felt through the outlet. Tumors that are not so firmly attached to the structures, even though they arise in the posterior part of the orbit, may work their way forward, pushing aside the globe until they can be felt. Retrobulbar tumors may grow to be 2 cm. in diameter before producing appreciable proptosis. As the tumors increase in size the globe is pushed forward, not in steady, slow progression, but by stages, as the tumor fills less resistant parts of the orbit. Proptosis of a few millimeters may occur within a few days, and further advancement of the globe will not take place for several months. I have every reason to believe, however, that the tumor causing the proptosis continues to increase in size gradually, although in areas in which it does not press the globe forward. It is not possible to determine the duration of a tumor by the onset of proptosis, nor can the rate of growth of a tumor be determined by the rate of progress of proptosis. Although lateral displacement of the eye that is proptosed, in reference to the rim of the orbit, may be a guide as to the situation of the tumor within the orbit, the point at which the tumor originated cannot be so determined. The method of approach in operating on retrobulbar tumors, therefore, should allow considerable latitude for digital exploration with the minimal amount of trauma. The preferred operation is as follows: An incision is made just below the brow and parallel to its lower margin of the orbit from the superior nasal angle of the orbit to the frontozygomatic suture on the temporal wall. The incision should be carried to the bone, 4 to 6 mm. above the margin of the orbit. Along this line, the periosteum should be incised and separated from the bone around the orbital rim, with a blunt periosteal separator, such as is used in resecting submucous nasal septums. The periorbita may easily be separated from the nasal wall, the roof of the orbit, and a portion of the lateral wall, the main points of resistance being in the lacrimal fossa and the posterior orbital fissure. Before the periorbita is opened, a finger should be inserted into the wound and the content of the orbit palpated from above. The situation of the tumor can then be determined and the periorbita opened immediately over it. The periorbita should be opened behind its attachment at the rim of the orbit and in a sagittal direction. If it is necessary to incise the periorbita to the anterior margin, the edges should be carefully marked with sutures so that they may be properly reunited. Resection of the tumor may be carried out from this

point with little trauma and interference from orbital fat, and sufficient room will be provided for proper handling of all instruments. After removing the tumor, the incision of the periorbita is united with catgut, the periosteum resutured above the orbital margin, and the wound in the skin closed without drainage. Dressings are applied under moderate pressure.

For the removal of tumors of the optic nerve and sheath in the posterior part of the orbit, or tumors that lie in the nasal inferior quadrant, other methods of approach must be employed. The Krönlein operation need be employed only for tumors of the nerve and its sheath or for those situated in the posterior inferior portion of the orbit. The Krönlein operation is rarely necessary, is more difficult, and usually is followed by more deformity than the operation described. Tumors that occur in the nasal inferior quadrant of the orbit should be removed through the palpebral fissure. Canthotomy may be done if necessary. Incision should be carried through the lower culdesac of the conjunctiva to the rim of the orbit, the globe pushed to the lateral side, and the tumor resected. If the conjunctiva is properly approximated, the operation will not be followed by entropion. Adhesions between the skin and the lower margin of the bone of the orbit may be avoided, whereas if the incision is made through the skin parallel to the rim of the orbit, deformity of the lid and disfiguring scars will persist.

Enucleation of the eye is frequently followed by retracted sockets that are not suitable for artificial eyes. A great variety of substitutes for enucleation have been described and commonly practiced when it is desirable to provide a firm bed for prosthesis. The method of providing an anterior covering for the prosthesis is important. In enucleating the globe, all the bulbar conjunctiva should be saved by incision close to the limbus. The conjunctiva should be separated from the anterior half of the globe by a blunt hook. The tendons of the ocular muscles should be severed close to the globe and Tenon's capsule separated from the sclera without mutilation. Satisfactory prosthesis is a lead-free glass ball, 22 mm. in diameter. This should be inserted into Tenon's capsule and covered by two layers of the capsule, folded over the opening in the form of envelope flaps, and fastened with catgut sutures. The conjunctiva should be closed by a running suture in a line parallel with the palpebral fissure, so as to allow deep retraction at the internal and external canthi. An artificial eye may be fitted immediately or after healing is completed.

Late marsupialization is also employed to improve the bed for an artificial eye in cases of retracted sockets. A horizontal incision through the conjunctiva, about the median line of the posterior wall of the socket, should be extended deeply into the orbit, and an attempt should be made to enlarge the socket, well posterior, so that anterior flaps may be fashioned to cover an inserted prosthesis. For delayed marsupialization carbonized animal bone is preferable to glass or metal spheres, as it is less likely to be extruded. The use of fat, muscle, fascia, or fresh bone has been advocated but, I believe, is less satisfactory because of the inability to estimate the amount of absorption that will follow implantation. I have known of two instances of occurrence of malignant neoplasm in implanted tissue in sockets in which neoplasm did not exist before. I have discontinued entirely the use of autogenous tissue implants.

DISCUSSION

F. B. FRALICK (Ann Arbor): Dr. Benedict's interesting paper presents a scholarly summary of operations on the orbit—particularly in regard to the removal of the orbital tumors of which he has made a noteworthy contribution to the ophthalmic literature. Of evisceration of the globe Dr. Benedict makes no mention. It is true that it has been frowned upon by many ophthalmic surgeons because of the reported cases of sympathetic ophthalmia following this procedure. In 1908 Harold Gifford collected the reports of twenty-seven cases of sympathetic ophthalmia following evisceration and found that the majority of the cases of sympathetic ophthalmia reported as appearing after evisceration have been found to be due to choroidal remnants left in the eviscerated capsule. We have all seen sympathetic ophthalmia develop in the fellow eye even months after enucleation of the injured eye, so that neither method is free from this complication. I feel that a carefully performed evisceration in selected cases is the operation of choice because the freely movable stump is even better than that usually obtained by glass ball implant. It is, however, no fitting operation to be performed by the careless operator who is liable to leave uveal tissue in the globe.

CHRONIC SUBDURAL HEMATOMA COMPLICATING SEVERE BRAIN INJURY

E. S. GURDJIAN, M.D.
DETROIT, MICHIGAN

Chronic subdural hematoma may be defined as a traumatic collection of blood or its products between the dura and arachnoid membranes of the cranium. Depending upon chronicity there is a membrane of varying thickness externally and a very thin membrane (adjacent to the arachnoid) internally.

As a rule a history of trauma is obtained in the majority of the cases. Usually however, this trauma is insignificant and not incapacitating at the time. That the condition may accompany severe brain injury, I feel is not sufficiently stressed. In such a case the chronic subdural hematoma becomes the important factor in causing a protracted illness and possible fatal termination if unrecognized. In the Receiving Hospital, where a large number of cases of acute craniocerebral injury are treated, the association of severe brain injury and chronic subdural hematoma is occasionally proved at operation. We have now come to suspect the condition in all cases of head injury who recover from the initial state of shock and brain damage and yet do not convalesce as usual and remain in a more or less stuporous condition, complaining of headache if sufficiently conscious. In such cases lumbar puncture with pressure determinations is always made. If the spinal fluid pressure is found to be high, exploratory trephine on both sides of the head in the parietal region is advised. These explorations have uncovered many a case of chronic subdural hematoma and I should next like to discuss a few case reports pertinent to the subject.

CASE REPORTS

Case 1.—Fall. Unconscious following accident. Eventual left third nerve paralysis. Linear fracture of left temporo-parietal. Bloody spinal fluid. Left sided chronic subdural hematoma. Complete recovery after operation.

L. G., aged forty-nine, entered the hospital in semi-conscious condition on October 10, 1933. Thirty-six hours before he was thrown out of a cab, falling on the head. He was taken home and remained unconscious for abouty twenty-four hours.

Examination.—The patient answered questions with difficulty and his speech was suggestive of aphasia. There was partial ptosis of the left upper lid (Fig. 1). The left pupil was slightly larger. Both pupils reacted to light. There was evident weakness in the right half of the body, more marked in the upper limb. The fundi were negative.

Laboratory Findings.—White count 12,200, blood Wassermann negative, urine negative, spinal fluid pressure 350 mm. Fluid contained red blood cells, spinal fluid Wassermann negative. X-ray examination showed a fine linear fracture of the left temporo-parietal region.

Pre-operative Course.—The patient remained in a more or less drowsy state until six days after admission, when he became worse. In a few days there was complete third nerve paralysis on the left side. The weakness of the right half of the body became more definite. On the basis of increased spinal fluid pressure and increase in drowsiness it was thought advisable to explore him for chronic subdural hematoma eight days after the accident.

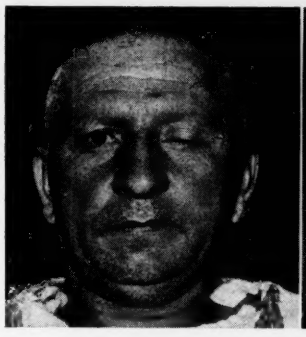


Fig. 1.

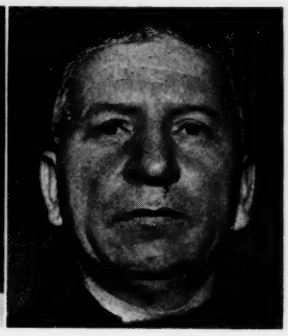


Fig. 2.

Operation.—Under general anesthesia a small opening was made in the left parietal region. The dura was blue in color because of underlying pathology. On incision of the dura about two ounces of dark red-brown fluid gushed out. The underlying brain looked normal. In view of the associated fracture and brain injury it was thought advisable to do a subtemporal decompression. When the dura was opened in the temporal region several pieces of clotted blood gushed out. The underlying brain in this region also looked normal.

Postoperative Course.—Patient was much better the following day. He was in the wheel chair on the eighth day. The third nerve palsy was completely gone four weeks after operation (Fig. 2).

COMMENT

This is an example of chronic subdural hematoma associated with a blow sufficiently severe to cause a fracture of the skull and bloody spinal fluid. It also suggests an accurate picture of the formation of subdural hematoma. Although the central portion of the clot had undergone liquefaction the portion covering the temporal region (or its peripheral margin) was still quite solid but it was jelly-like in appearance. There was a thin membrane of clotted material immedi-

ately under the dura covering the fluid portion of the clot, but this was quite soft and had not undergone the fibrosis which is so characteristic of the outer covering of chronic subdural hematoma. In the process of organization undoubtedly the dura contributes much of the necessary elements, namely, blood supply and vascular proliferation.

Case 2.—Auto accident. Unconscious on entrance. Left sided hemiparesis slow in progress. Fracture right temporal region. Bloody spinal fluid. Right sided chronic subdural hematoma. Complete recovery after operation.

E. N., aged twenty-nine, entered the hospital on October 20, 1933, following an automobile accident. On entrance she was unconscious and remained so for several days.

Examination.—Right pupil was larger but this disappeared within twenty-four hours. Beginning the third day she showed evidences of weakness in the left half of the body.

Laboratory Findings.—On admission white count was 20,000. Blood Wassermann negative. Spinal fluid contained red blood cells, and two days before operation showed definite increase in pressure, with fluid gushing from the needle. Spinal fluid Wassermann was negative. There was fracture of the right temporal region.

Pre-operative Course.—She remained more or less drowsy with increasing weakness of the left half of the body. Spinal fluid at first was bloody but later cleared up. In view of the fact that the spinal fluid pressure was high and because of the increasing drowsiness and weakness in the left half of the body it was thought advisable to explore nine days after accident.

Operation.—A small opening was made in the right parietal region. The dura was definitely blue in color because of underlying pathology. When the dura was opened about two ounces of black-brown fluid escaped. After evacuating the contents of the subdural hematoma inspection of the brain underneath showed normal appearance. There was marked molding and "shoving" of the brain. A flat rubber was used to drain the cavity. Because the patient did not respond as expected, we thought it advisable to explore the left side and on finding no clot on this side a subtemporal decompression was performed.

Postoperative Course.—This was quite stormy and patient carried on for several weeks without appreciable recovery, but, being sufficiently well, she was transferred home and when seen about two months after admission she was feeling fine with no evidence of post-traumatic sequelæ, except for slight weakness of the left lower limb.

COMMENT

Here is another example of chronic subdural hematoma associated with fracture of the skull and bloody spinal fluid. The hematoma was on the same side as the fracture. The external wall of the subdural cyst was quite thin and broke easily. It was mostly made up of fibrinous exudate with organization. In both Cases 1 and 2 there was marked molding and "shoving" of the brain, so characteristic of the usual case of chronic subdural hematoma coming to operation a month or more after accident.

Case 3.—Fall. Unconscious following accident. Restless and psychotic, necessitating restraint. Fracture of left temporo-parietal. Right chronic subdural hematoma. Recovery following operation.

J. O., aged forty-two, entered the hospital on December 10, 1933, in an unconscious state. There was a history of heavy drinking prior to a fall with the patient landing on his head.

Examination.—The right pupil was larger and fixed to light. This disappeared within the next twenty-four hours. There was bleeding from the left ear. There were no evidences of localized lesion until about three weeks after admission, when there appeared a suggestion of weakness in the left half of the body. The fundi showed no choking at any time.

Laboratory Findings.—Entrance white count was 13,200. Blood Wassermann was negative. Spinal fluid was at first bloody but later was clear. Spinal fluid pressure was between 400 and 450 two days before operation. X-rays showed fracture of the left temporo-parietal extending from base to vertex.

Pre-operative Course.—Patient never regained consciousness and about four or five days after admission was so restless that he had to be moved to an isolation ward and restrained. In view of the definite increase in the spinal fluid pressure and in view of a suggestion of weakness in the left half of the body it was thought advisable to explore the right subdural space. This was done twenty-six days after accident.

Operation.—Through a small trephine opening the dura was exposed in the right parietal region. It was blue due to underlying pathology. On opening the dura about three to four ounces of black-brown fluid escaped. The contents of the cyst were evacuated. A flat rubber was used for drainage. In view of the fact that the patient did not respond properly to this operation we thought it advisable to explore the left side also. A week after the first operation an opening was made in the left parietal region. On incising the dura it was evident that the membranes and the brain were adherent. A small piece of tissue was removed for biopsy.

Postoperative Course.—The patient had a stormy convalescence. He developed two pressure sores but eventually made a complete recovery and was discharged from the hospital about three months after entrance.

COMMENT

This is another example of chronic subdural hematoma complicating severe brain injury. The biopsy from the left parietal region showed evidences of chronic inflammation and deposits of blood pigment (piarachnoiditis). Patient was suspected of having the hematoma because of the definite increase in the spinal fluid pressure. The hematoma in this case was on the right while the fracture of the skull was on the left side.

DISCUSSION

Chronic subdural hematoma is a well described clinical entity. There are numerous papers in the literature on the subject. Its

appearance in infants is well brought out by the contributions of Sherwood, Burhans and Gersterberger, Peet and Kahn and others. In this group the condition may be mistaken for hydrocephalus of childhood because of rapidly increasing size of the head although the patient does not show the characteristic behavior of a hydrocephalic child. In adult life the condition has been seen in all ages. The recent contributions of Putnam and Cushing, Grant, Gardner, Jelsma, Kaplan, McKenzie, Fleming and Jones, Dandy, and others have clarified most of the points in the diagnosis, etiology and treatment of this condition. Subdural hematoma is usually caused by slight trauma. Very often the history of trauma is forgotten. It is true that in the majority the onset of symptoms is evident two to six weeks after injury. However, the initial hemorrhage if sufficiently massive may cause extreme disability, coma and death within twenty-four hours after the accident. Such a case was treated by us and a short history is here given.

Smith, aged sixteen, a robust negro boy, was knocked out momentarily in professional boxing. Within three hours after the accident he was in deep coma. When seen four hours after the accident the right pupil was dilated. Spinal fluid was clear but tension was markedly increased. A pre-operative diagnosis of right middle meningeal hemorrhage was made. At operation no extradural clot was found but the dura was blue due to underlying clot. When the dura was opened much soft clot gushed out. After removing all of the blood clots from the surface of the right cerebral hemisphere the wound was closed in layers. In spite of all measures he died about eighteen hours after operation. At autopsy the hemorrhage was thought to come from a tear in a cerebral vein entering the sagittal sinus. There were no contusions of the brain and no fracture of the skull. In this case the hemorrhage was so massive and rapid that the patient did not have the usual latent period so common in chronic subdural hematoma. The microscopic findings suggested a beginning organization of the clot from the inner aspect of the dura.

That the condition can be associated with severe brain trauma and fracture of the skull is well brought out in the above described cases. All had fracture of the skull and bloody spinal fluid. In two cases the subdural hematoma was on the same side as the fracture of the skull and in one case it was on the opposite side. That in certain cases the localization of the pathology is quite difficult on the basis of clinical findings is an accepted fact but the fact that both parietal regions are explored obviates mistakes in diagnosis of localization.

It is possible that in some cases of brain injury the associated subdural hematoma may remain sufficiently latent to allow discharge of the patient from the hospital in an improved condition, but on the other hand its presence can easily upset the balance and cause a fatal termination if unrecognized. The diagnostic features presented in the above cases were sufficiently uniform to discuss.

1. All had protracted illness with a tendency toward increasing severity. 2. The spinal fluid pressure was definitely increased (over 300 mm.). However, other evidences of increased intracranial pressure such as choked discs and headaches were not noted (the latter symptom because of uncoöperative state of patients). Undoubtedly, choked disks may appear in such cases. 3. The problem of localization was quite simple in one case because of a third nerve paralysis on the same side. In the other two there were evidences of hemiparesis suggesting accurate localization; however, I am cognizant of the fact that in cases of subdural hematoma in general the only accurate way to rule out the condition is bilateral exploration.

The operative approach in these cases (as in all other cases of subdural hematoma) is drainage of the subdural contents through small trephine openings as suggested by Rand, McKenzie, Fleming and Jones and others. This is simple in execution and conserves the patient. The results are excellent. Usually we drain the subdural space with a flat rubber drain which is removed within twenty-four to forty-eight hours. Subtemporal decompression may be performed to help the associated brain damage and increased intracranial pressure in cases with severe brain trauma.

SUMMARY

1. Skull fracture with severe brain injury may be associated with subdural hematoma. This is the case frequently enough to cause one to suspect the condition.

2. In such cases patients have a protracted illness which would frequently end fatally if the condition is unrecognized.

3. In the presence of protracted illness due to severe head injury the presence of increased pressure of spinal fluid should make one suspect associated chronic subdural hematoma. Bilateral exploration in such cases through small trephine openings is sane surgery.

BIBLIOGRAPHY

1. Burhans, C. W., and Gerstenberger, H. J.: Jour. A. M. A., 80:604, 1923.
2. Dandy, W. E.: Lewis' Loose-Leaf Practice of Surgery, XII:295. Baltimore: Prior Co., 1932. Jour. A. M. A., 101:772, 1933.
3. Fleming, H. W., and Jones, O. W.: Surg., Gynec. & Obstet., 54:81, 1932.
4. Gardner, W. J.: Arch. Neur. Psychiat., 27:847, 1932.
5. Grant, F. C.: Annals Surg., 86:485, 1927.
6. Kaplan, A.: Brain, 54:430, 1931.
7. McKenzie, K. G.: Can. Med. Assn. Jour., 26:534, 1932.
8. Peet, M. M., and Kahn, E. A.: Jour. A. M. A., 98: 1851, 1932.
9. Putnam, T. J., and Cushing, H.: Arch. Surg., 11:329, 1925.
10. Rand, C. W.: Arch. Surg., 14:1136, 1927.
11. Sherwood, D.: Am. Jour. Dis. Children, 39:980, 1930.

PHYSICIANS WITHOUT THE DEGREE "M.D." •

ROBERT BERMAN, M.D.†
DETROIT, MICHIGAN

The serious investigator of mundane endeavors who carefully analyzes that conglomerate achievement of the human mind, "Modern Medicine," will find, as he distills its various components, reflecting before him the brilliant images of anatomy, physiology, physics, the natural sciences, chemistry and finally bacteriology and psychiatry, all surrounded by lesser images of man's devious pursuits and all imbedded in a lustrous foundation of thought and observation.

For modern medicine is no single science but one of the broad milky ways upon which the various sciences reflect their light. Small wonder is it then that many of the great discoveries both leading us to modern medicine and in modern medicine have been made not alone by the bearers of the title "Doctoris In Arte Medica," but often by devotees of the various sciences mentioned and by untitled probers of human thought and behavior.

It is impossible here to even attempt to tell of all of the contributions to medicine by non-physicians; merely naming these would fill a volume. But we hope to show the debt of modern science to its component sciences by brief mention of some major advancers of medicine, most of whose work you know, but many of whom you may not have realized were not physicians.

We might start with the authors of a very famous book and with the book itself, "The Bible"—few think of it as a teacher of medicine but it represents an early force in medicine even though spread under the dictum of religion. Its vast influence in spreading and enforcing the knowledge of that time in preventative medicine, in contagion and in eugenics was undoubtedly greater indirectly than that of any physician; and in spite of many fallacious ideas undoubtedly of much value medically.

Surely a few lines from Leviticus, "The Third Book of Moses," will convey that here was some understanding of contagion and an early attempt to enforce, in religious guise, preventative medicine by religious leaders rather than physicians.

In Leviticus, Chapter 13, we read: "When a man shall have in the skin of his flesh a rising, a scab, or bright spot, and it be in the skin of his flesh like the plague of leprosy; then he shall be brought unto Aaron the priest or unto one of his sons the priests." The next paragraph deals with the methods of the priests in determining whether the individual has leprosy.

And in paragraph 46: "All the days wherein the plague shall be in him he shall be defiled; he is unclean; he shall dwell alone; without the camp shall his habitation be."

And further: "He shall therefore burn that garment, whether warp or woof, in woolen or in linen, or anything of skin, wherein the plague is; for it is a fretting leprosy; it shall be burnt in the fire."

And again: "Then the priest shall come and look, and behold, if the plague be spread in the house, it is a fretting leprosy in the house: it is unclean. And he shall break down the house, the stones of it; and the timber thereof, and all the mortar of the house and he shall carry them forth out of the city into an unclean place."

†Dr. Berman obtained the degree of A.B., University of Michigan, 1920; M.D., University of Michigan, 1926; Staff of Harper Hospital, North End Clinic and Children's Hospital, Detroit Interneship Harper Hospital, Detroit Post-Graduate work, University of Michigan. His practice is limited to internal medicine.

And in Chapter 15, we read an injunction on infectious diseases of some etiology apparently other than leprosy. "And the Lord spake unto Moses and to Aaron saying, Speak unto the children of Isreal and say unto them, when any man has a running issue out of his flesh because of his issue he is unclean. Every bed, whereon he lieth and hath the issue is unclean; and everything where on he sitteth, shall be unclean."

"And when he that hath an issue is cleansed of his issue; then he shall number to himself seven days for his cleansing, and wash his clothes, and bathe his flesh in running water, and shall be clean."

Some may question the exact ailment the above refers to but its medical aspect as regards contagion seems clear.

We read in Chapter 18: "None of you shall approach to any that is near of kin to him, to uncover their nakedness. Thou shalt not lie with mankind as with womankind; it is abomination. Neither shalt thou lie with any beast to defile thyself therewith; neither shall any woman stand before a beast to lie down thereto; it is confusion." Here is definitely an attempt to condemn abnormal sexual relationships.

And in Chapter 19, an understanding of food spoilage is hinted at for we read: "And if ye offer a sacrifice of peace offerings unto the Lord, ye shall offer it at your own will. It shall be eaten the same day ye offer it, and on the morrow; and if ought remain on the third day, it shall be burnt in the fire. And if it be eaten on the third day, it is abominable; it shall not be accepted.

The Jewish Dietary or Kosher laws are also an example of an attempt to instill proper food habits and were undoubtedly based upon what appeared at that time rules essential to health, though today many of them have no significance.

From the early pre-biblical days and biblical days up to the 17th century the advancement of medicine was a divorcement from ecclesiastical and philosophical mystery, and a development of clinical understanding, but most of this was done by men practicing the physician's calling

But in Delft, Holland, in 1632, was born Antonius Leeuwenhoek, whose position in life varies with different authors, from small merchant to city hall janitor, to that of a gentleman of leisure. Be that as it may, his spare time and perhaps we might secretly think most of his time, was devoted to the making of lenses and microscopes and peering gluttonously at anything that might portray some unknown vision under his lens. Here was not the theorizer, or contemplative analyzer, but the restless incessant observer who had to see to believe.

But even this patient, laborious worker must have bubbled with joy when for the first time in some rain water he revealed by the aid of his improved microscope that there were small beasts invisible to the naked eye. A constant barrage of correspondence between himself and the Royal Society of England followed his discovery of "animaliculæ." He described the various bacterial groups; namely the coccus, the streptococcus, the staphylococcus, the bacillus and the spirillum; but their vast influence over our lives appeared to be in no way apparent either to him nor to the austere and learned gentlemen of the Royal Society of England.

His development of the microscope and his discovery of microscopic forms of life were surely the foundation for the later great discoveries of medicine. We must, however, somewhat criticise him, for his best microscope he stated he would never let anyone use or see; teach his methods, he would not; and, blasphemy of blasphemies, he had a contempt for physicians, who, knowing nothing of the microscopic details of the body as he did, were certainly impotent, in his estimation, to treat mankind.

Not long afterward far to the south of Leeuwenhoek's Holland, in nothern Italy in 1729 was born Lazzaro Spallanzani. But here was no tedious, even though great, one-track mind, but a combination of poet, philosopher, mathematician and scientist who must needs secure his freedom of scientific doubt and probing by the security of becoming ordained Priest.

Even the most erudite and greatest scientists in those days believed in spontaneous generation; but the doubting mind of Spallanzani was not satisfied to doubt—not to have an answer one way or the other that could be proven. By the use of small flasks of nutritive soup and the ingenious, even though it be commonplace to us now, method of boiling them and keeping a number sealed from the air and a number unsealed, he convinced a skeptical world that spontaneous generation was indeed a myth; by

demonstrating that the sealed boiled flasks, protected from air contamination developed no organisms.

He, too, it was whose keen brain first perceived that bacteria could live in a vacuum —the first conception of anaërobic bacteria. And when scientific proof was needed to support the already started observation that bacteria could multiply by fission Spallanzani was the one to bring it forth.

But it was more than these discoveries that this poet, this enthusiastic jack-of-all-trades, gave to science and medicine; it was his method of scientific test, of having normal controls to compare with the materials experimented on.

During the time of Leeuwenhoek, in England, in 1642, was born an individual of whom we do not think as a contributor to medicine but whose name is almost synonymous with the Laws of Gravity—Isaac Newton. But medicine may well regard him as one of its clan, for this mathematician was the first to show the composite nature of white light and to break and analyze the spectrum; and therein to display to us the therapy ray of still mooted value—the ultra violet ray.

He is said to have been a three pound baby at birth. One is tempted to wonder what would have happened had he been a seven pound baby. But this thought might have its unhappy possibility likewise.

Not long afterward, in 1743, in still monarchical Paris, was born Antoine Lavoisier, statesman and chemist. He it was who determined the real nature of oxygen and hydrogen. It was he who for the first time made mankind aware of what it breathed and the purposes of the air it breathes, and gave physicians and science an understanding of the vital process, respiration. Sad indeed, it is to think that this shining beacon of chemistry should have been beheaded by the frenzied injustice of the Revolutionary Tribunal. And in mentioning Lavoisier we must not forget a humble entry, into this glorious array of scientists, from the ministry, one Joseph Priestly, an American Nonconformist Unitarian Minister, who paved the way for Lavoisier by discovering the element oxygen and some of its values. His name for oxygen was "dephlogisticated air."

And those of us who believe that modern medicine has been greatly advanced by electricity, perhaps, as much through its use in our laboratory methods as in any other way, will surely hold a place amongst medicine's immortals for Michael Faraday, the great English physicist, born in London in 1791. True, Faraday did not discover electricity; Boyle, Von Guericke, Franklin, Volta, Oersta and Humphry Davy had demonstrated the nature of the electric current and that iron and steel could be magnetized by it. But it remained for Faraday to discover the nature of the induced current, to build the first simple machines that paved the way for the use of electricity in all human endeavors as well as medicine; and that he knowingly scorned to patent a discovery which he keenly realized could bring him tremendous financial gain, should, in itself place him on a noble pedestal.

One of these cinematic days, a great wail of sorrow is going to burst forth from the mouths of all but one of our hero-seeking movie producers, for they have overlooked not only one of the greatest figures in medical history but one of the most thrilling and picturesque figures in biographic vision. Not a physician, this towering giant so well known to all of you, but a chemist who metamorphosed himself into a bacteriologist. Well might we call Louis Pasteur the Columbus of medicine for though his name is not adorned with the title of M.D. he unfolded a new world and a new sphere of thought—a new basis of activity for medical science.

Practically no time nor study did this Louis Pasteur, born in Dôle, France, in 1822, put in learning of the diseases of mankind or of the structure of the human body. For he was a chemist and later a bacteriologist; and, paradoxically enough, his great basic discoveries began, not from a lofty aim to help mankind's sufferings, but from efforts to aid the industry and commerce of France. Pasteur's first fame was made in chemistry—his discovery that the two forms of tartaric acid had isomers, and the conclusion that compounds could be different by merely being mirror images. This discovery brought him a professorship in Lille and a wife, but these two rewards did not, as some misogynists might think, counteract each other, for history records and reiterates the understanding and devotion of his wife. It seems worthwhile to note this marriage, for the constancy, the care, and understanding his wife gave him are always in view in his history; and one must needs

feel that a marriage to some irritable gayety-loving female might well have kept from the world his later great contributions.

And now we come to the Saga of the sugar-beet. If ever a bacteriological society adopts a symbolistic ritual, one of its holy stars might well be the sugar-beet. For Pasteur, heeding the plea of the beet sugar growers, that science help them in their sudden difficulties in the fermentation of alcohol from sugar-beets, excitedly spied some strange minute and seething rod-like forms in the fermenting sugar-beet brew; and lo and behold, the enthusiastic Pasteur soon had, from this observation and study, given to the world its first knowledge that fermentation is caused by yeast, that yeasts were not merely incidental; and secondly, that these minute rod-like forms in some way affected or hindered the yeast's work. But even more he realized in the recesses of his keenly reflecting mind that probably similar small living things did much other damage in other activities of life. No shrinking violet was Pasteur and it needed no one but himself to spread the story of his discovery. As a result he was made director of scientific studies in the Normal School of Paris, and here microbes became his food, his drink, his work and his dreams. He set about successfully to re-prove Spallanzani's work, to show that spontaneous generation was a myth. He showed that certain microbes caused the spoiling of wine and that they could be killed without boiling, merely by heating to a certain point—which process now bears the deserved name of Pasteurization. His next great triumph was the saving of the silkworm industry by demonstrating the presence of parasites in the silkworm.

And now in patriotic fervor, he let loose all his scientific armamentarium to make French beer superior to the German. And when the great surgeon, Lister, wrote him to acknowledge that his discovery of antiseptic surgery owed its inception to Pasteur's work on bacteria, Pasteur with enthusiasm, even if without artistic taste, inserted Lister's letter in a treatise on beer that he wrote. Our reverence for Pasteur will surely keep us from inferring that our great scientist thereby intended to intimate the equal importance of his improvement in French beer and the discovery of antiseptic surgery.

Pasteur did not prove the bacterial relation of infection and disease, but by his experiments in foods, he was so certain of it that he was constantly proclaiming and preaching that bacterial prevention would prevent disease and epidemics, and it seems that his failure to attack the problem first was due probably to the fact that he was not a physician, and not in contact with human disease.

But soon came the great physician, Dr. Robert Koch, in Germany, to demonstrate the anthrax and tuberculosis organisms, and at once began a race between chemist-bacteriologist Pasteur, and the physician, Koch, to discover new disease organisms. And now Pasteur left the vineyards and beer-kegs. Though not proving it, he asserted that childbed fever was due to a transmitted organism. With the help of loyal capable physicians, whom he took as assistants to make up for his lack of medical knowledge, he went directly at the task of isolating bacteria. Soon his agile brain perceived the fact of bacterial immunization, and he proceeded, in what was an almost national demonstration, to display the effectiveness of creating anthrax immunity in sheep. And then came the thrilling climax to the sixty-two years of Pasteur's life. For now with the aid of his brilliant medical co-workers, after patient months of work, came his discovery of the method of vaccination against rabies.

In the same year that Pasteur was born, was born one Gregor Mendel. Not his even the allied calling of Medicine, such as Pasteur's chemistry, but the humble life of a pondering monk in a monastery at Brunn, Austria. No scientific training, no dazzling triumphs for this man, but yet perhaps by the very facts of heredity that he established, was there in him the scientific curiosity that enabled him, with his now well-known work on the common pea, to make his revolutionary discoveries in heredity. And though his work remained long in oblivion, yet its rediscovery in 1900 produced a definite advance in medical research in heredity and eugenics.

And we must record another non-physician, namely Sir Francis Galton, whose life, though devoted to exploring and weather studies, did not prevent him from making startling advances in heredity, not by constant test as Mendel, but by his astute observations of the characteristics of mankind. And he was, perhaps, the first to advocate the belief that there should be restriction in the birth of the unfit.

The name of Eli Metchnikoff usually brings up the vision of an almost fanatical enthusiast of lactic acid buttermilk, as a cure-all and longevity producer. But the great work of this Russian, born in 1843, who was a zoölogist and biologist, and not a physician, was not the longevity of the Balkans, but his discovery of Phagocytosis; and though his theory that all immunity was due to this, may not be entirely correct, medicine owes him a great debt.

When laymen are apt to twit us with the fact that medicine has evolved only an uncertain science, we oft scornfully pull out of our scientific bag a reference to the X-ray as a physician's great contribution from the standpoint of exactness. But it was a professor of physics, William Roentgen, who first perceived in 1895 the value of those invisible, penetrating rays that emanated from the vacuum tube; the latter, invented by another physicist, Sir William Crookes. It is hardly necessary to reiterate the benefit to medicine, made by the contribution of these two physicists.

And as we contemplate now the ever increasing value of the X-ray in malignant diseases, there comes the thought that another one of medicine's boasts, the use of radium, was donated to us physicians, not by a follower of Hippocrates, but by a professor of physics and chemistry and even more by his wife, an amateur chemist, Madame Curie, born in Warsaw, in 1867. Their struggle to isolate radium was done, not with its medical potentialities in view, but merely to isolate a new element; but when a chance burn of the flesh showed the power of its emanations, the Curies were quick enough to perceive its possibilities in medicine.

Modern medicine is filled with writings on vitamins, and physicians have done tremendous work in its field, but perhaps, the first and keenest observations that led to medicine's later pursuit and understanding of them was made, not by a physician, but by a brilliant sailor, Captain James Cook, the discoverer of the Hawaiian Islands. He it was who first saw the relationship between scurvy and the lack of fresh foods, and was the first to definitely state and report that scurvy was due to lack of fresh foods. And it was a physiologist, Gowland Hopkins, who, in 1906, in the feeding of rats, first made the discovery that there were accessory food factors in fresh food, and so stimulated the vitamin surge.

And then there was Emil Fischer, born in Prussia, in 1852, who gave us that valuable drug, Veronal, and showed the specificity of the intestinal enzymes, and first developed our knowledge of the purines, the sugars, and the amino acids.

Laryngologists have to thank a great individual in a field rather remote from the sciences for one of the most important instruments in their diagnostic equipment. For it was Manuel Garcia, a Spaniard, born in 1852, teaching singing in Paris, who, in an attempt to learn more about the characteristics of the vocal cords, hit upon the brilliant idea of the laryngoscope.

And amongst other non-physicians, who enabled medicine in the past and present century to forge steadily ahead, notable are John Scott Haldane, a physicist, born in Edinburgh, in 1860. He it was who first showed the chemical regulation of respiration and evolved the methods of gas and blood analysis, and brought about the invention of that important instrument, the basal metabolism machine.

Not an internist nor a dermatologist but a zoölogist was Fritz Schaudinn, born in 1871, in Prussia. He chiefly by his skill and technic in staining was able to discover for us, in 1905, the spirocheta pallida, that corkscrew organism of syphilis, which had so long eluded constant attempts at its revelation.

And I have a slight suspicion that all surgeons must feel an inward wave of chagrin when they reflect that the discovery that allowed them to make their greatest progress, *i.e.*, general anesthesia, was developed, not by one of the clan of physicians or surgeons, but by two dentists, Horace Wells, of Connecticut, and William Morton, of Massachusetts, who, in 1846, first attempted the use of ether on a dental patient. Morton, though a dentist, was at the time a medical student, and quickly perceived the possibilities of ether anesthesia in surgery, and on October 6, 1846, the first operation with ether anesthesia was performed by a Dr. Warren, in Massachusetts General Hospital. It is interesting to note that Sir Humphrey Davy, a physicist, had in 1800 (forty-four years before), noted that nitrous oxide could destroy pain, and had stated that it might probably be used to advantage in surgical operations, but these two dentists were the first to use and see its practical possibilities.

The development of the theory of evolu-

tion was made chiefly by two naturalists, Darwin and Wallace, though Herbert Spencer, the great philosopher, had shrewdly remarked, prior to their epoch-making conclusions, that, "Life is an internal adaptation to external relations." And though great physicians have contributed noteworthy additions, credit for the origination of this theory indisputably belongs to these two nature students.

Psychiatry and the study of human relationships is being recognized today as deservedly a part of the province of medicine, and it seems logical that, to understand human mental needs and human reactions, one should understand the body which both affects and is affected by these needs and reactions. But the earliest conceptions of the human mind and behavior were often made, not by physicians, but by thinkers and even by semi-charlatans, and, though many of the latter may have had a lack of scruples, they were oft endowed with insight.

It was, perhaps, a brilliant, though semi-quack, physician, Frederick Mesmer, born in 1733, who first focused the attention of thinking men on the influence of the mind on bodily activities, by his practice of animal magnetism, later known as Mesmerism, and then hypnotism. But the first inkling of psychoanalysis was brought forth by a watchmaker, one Phineas Quimby, born in New Hampshire in 1802, who first taking up Mesmerism, discarded it. He practiced his new method by rubbing his patients' heads and abdomens gently and having them speak freely of all that was troubling them or that came to their mind. He claimed that, "Disease is primarily an erroneous belief to be cured by truthful suggestion." Mary Baker Eddy was a patient of his in 1864 and undoubtedly Christian Science indirectly sprang from Quimby. Freud undoubtedly initiated his own revolutionizing theories and made his basic conclusions independently, but one suspects that this early method of Quimby, had it been developed, would have achieved many of the conclusions later expounded by Freud.

The teaching of normal sexual life and the understanding of birth control, which should have been entirely in the hands of physicians, seems, until recent date, to have been sadly neglected by them. Apparently it took the love of freedom and mental vision of poets and literary men to throw off the shackles of the theological attitude that sex was some horrible and forbidden thing, from which the minds of man should stand aside; and not dare to understand. Men of the rank of Voltaire and Goethe stimulated freedom in all action and thinking, though our own writers, like Walt Whitman and a brilliant, courageous, graduate nurse, Margaret Sanger, were undoubtedly leaders in brushing aside the forbidding veil of ignorance in sex. But it is interesting to note that even recently a survey of physicians' opinions in birth prevention, made by one of our own group, showed a few physicians, even in this day, who flatly maintained they gave no advice on it under any conditions.

It might be fitting in ending to mention Reuben Kahn, bacteriologist, now head of the laboratories in Ann Arbor, who has given us the Kahn test, which has almost supplanted the Wassermann, and who has recently been cited for his brilliant new work on immunity. No physician's training has he had, but go to any of the medical meetings in Ann Arbor, and there you will see this eager-eyed, small, energetic but quiet man, intently absorbing every conclusion made, and see shining in his face that earnest hunger for some point that might lead him to show some new and worthwhile research.

We have omitted some of the greatest and innumerable of the lesser of non-medical contributors to medicine, but, as we have mentioned, their names are legion. It may startle us when we contemplate how many of the great names in medicine were not adorned with the title "Physician," but truly they were all "Physicians without M.D.'s," and, rather than feel humbled, we should feel elated that, perhaps, the future great discoveries of medicine may be made not only by great medical men, but by keen geniuses in the planets of chemistry, or physics, et cetera, or even by some non-scientist, whose lucid insight and intelligence will construct or unearth from our present knowledge some brilliant creative discovery.

THE JOURNAL
OF THE
Michigan State Medical Society

PUBLICATION COMMITTEE
F. A. BAKER, M.D., Chairman.....Pontiac
A. S. BRUNK, M.D.....Detroit
J. EARL McINTYRE, M.D.....Lansing

Editor
J. H. DEMPSTER, B.A., M.D.
5761 Stanton Avenue, Detroit, Michigan

Business Manager and Editor County Society Activities
FREDERICK C. WARNSHUIS, M.D., D.Sc.
2642 University Avenue, St. Paul, Minnesota, and
Grand Rapids, Michigan

JULY, 1934

EDITORIAL

DEMAND AND SUPPLY OF M.D.'S

This is a perennial topic for this time of year. The month of June liberates a new supply of physicians fresh from hospital internship to compete in an already crowded profession. It was stated in a recent number of the *Journal of the American Medical Association* that in 1933, 5,012 persons entered the medical profession through licensure. During the same period 3,500 physicians died, adding to the profession approximately 1,500 persons.

Students of vital statistics maintain that the population of the United States is tending towards stability, since a study of the decade 1920 to 1930 shows an increase of only six-tenths of one per cent a year. It is evident that the medical profession is increasing in numbers more rapidly than the general population.

According to the latest available statistics there is one licensed physician to every 780 persons in the United States. The proportion in England is one to 1,490; in France one to 1,690; in Sweden one to 2,890. Of course we are living in an age of "overcrowding." No profession or vocation is exempt. That is what unemployment means and it is one of the problems, the greatest problem of the immediate future.

The ratio of one physician to 780 persons, however, does not represent the actual situation so far as medicine is concerned; if it did it would not be so serious. We have also the cultist in great numbers who sees many "patients." Perhaps the number who practice the various bizzare forms of healing is held in check by the number of qualified licensed physicians. To limit further the number of properly trained physicians might mean a greater development of cultism. The public by law demands a high standard of non-professional and professional education of its regular physicians and surgeons. It has been pointed out time and again how inconsistent of the state to permit persons without any adequate education and training to attempt to practice healing. When a poor nit-wit in the guise of a chiropractor is able to carry on until he is seized by the arm of the law, the whole state is to blame for permitting circumstances whereby any half baked person can insinuate himself into the practice of healing in the guise of a cultist.

So-called "overcrowding" as it concerns the medical profession would be relieved by the elimination of the cultist and the dissemination of information in regard to the possibilities of scientific medicine.

ADEQUATE REPRESENTATION

The *Journal of the Indiana State Medical Association* in its issues for May and June contains tabulated statements of representation in the American Medical Association of the profession of the various states over a period of ten years. The representation referred to includes such offices as president, president-elect, vice-president, secretary, general manager, treasurer, speaker of the house of delegates and members of the board of trustees which are elective, also the various councils and standing committees which are appointed or confirmed by the House of Delegates. The tabulation does not include the office of librarian, editor or general manager emeritus and the officers of the sections of the association. The findings are not without interest. The state of Illinois has had nearly three times the representation the state membership would warrant according to the distribution among other states. This of course can be accounted for owing to the fact that the headquarters of the Association are located in the State of Illinois. Michigan has no complaint to raise on the ground of inadequate representation at 535 N. Dearborn St., Chicago, inasmuch as the memberbership in the State

Medical Society here has been fully and justly represented. According to the *Indiana State Medical Journal,* twenty-seven states have supplied all the officers and committees for the decade studied, namely from 1924 to 1933, inclusive. Twenty-one states of the Union, it was found, had not been represented throughout this decade. In these twenty-one states there is given the number of 12,976 state society members or 13.12 per cent of the entire membership. There is a possibility that this lack of adequate representation is an oversight rather than a matter of design. Anyone interested in this piece of investigation will undoubtedly be supplied with a reprint on application to the *Journal of the Indiana Medical Association.*

In the interests of democratic distribution, however, now that this discrepancy has been brought to notice, efforts should be made to correct the situation.

THE BREEDING OF HOBBY HORSES

New York physicians (probably not all of them) have from time to time held an art exhibit at the New York Academy of Medicine. Perhaps in some respects the specimens of painting resemble some of those exhibited annually in Detroit by Michigan artists, for a distinguished sculptor who examined some of the work of the New York artists is reported to have said that he would hate to place his life in the hands of any surgeon who could not see forms and structure more accurately than the exhibitors of the Academy. In other words the critic is not willing to admit even that as artists they are good surgeons. We have seen works of art so-called by alleged artists that do not reflect much glory on the painter. However, this is cat argument.

Hamlet defined art as holding the mirror up to nature. This is not a good definition, otherwise a photograph would be the highest form of art. Old fashioned as we are, good draftsmanship seems at least a prerequisite to art. The ability to draw well (freehand), to put it in a negative way, should not be a hindrance to the surgeon. Such art should make one's hand the ready servant of his will. It should also train his faculty of observation. Surgery itself is an art in which technic forms a large part; the rest is judgment, and judgment is developed by observation and experience. We would like to see physicians and surgeons in every county society in Michigan emulate the example of the New York Academy of Medicine and spend some of their spare time in the breeding and rearing of such hobby horses.

VACATION TIME

This is the time of the year when in florid beauty trees and groves appear and man seems the only growth that dwindles here, with apologies to the poet Goldsmith. The present is, however, an exception, inasmuch as vegetation has likewise dwindled with the torrid atmospheric condition of May and June. With man, however, his spirits and his grip upon life are renewed by a change of scene. Relief from the daily routine is necessary if he is to approach his tasks with a fresh attitude of mind. It is not our purpose to suggest ways in which one's vacation may be spent. That is a matter of personal preference. The important thing is that the worker, professional or otherwise, surround himself with an environment different from that to which he is accustomed, a necessity for a certain period each year if he is to avoid growing stale. Not only for himself, but his office help should be given time off for reasons both altruistic and selfish. More is accomplished by the person who lives more or less a rhythmic life between work and play. Such a mode of living broadens one's horizon. It enables him to view his tasks in their proper light, namely as a means to an end and that end is life itself.

"To him who holds his nose to the grindstone rough,
And keeps it down there long enough,
There will be no such thing
As brooks that babble and birds that sing;
These three things will his world compose,
Just himself, the stone and his darned old nose."

PERCUSSION AND AUSCULTATION*

It has been less than two centuries since physicians have been enabled to diagnose chest diseases through the methods of percussion and auscultation. So important to medicine are these methods of auditory examination that the x-ray, electrocardiagram and clinical laboratory have supplemented rather than replaced them.

Although, since early times, men had pounded their chests with pride and had

*Historical editorial on the evolution of devices and methods that have aided in the advancement of medical science.

heard the sounds elicited, it remained for Leopold Auenbrugger, a Viennese physician, to realize that the resonance of the chest when struck was peculiarly associated with healthy lungs. For seven years, he studied the resonance of the human thorax in the Spanish Hospital of Vienna and in the autopsy room. He found that fluid in the pleural cavities or consolidation of the lung interfered with normal resonance so that on striking the chest, a dull morbid sound was produced. The duller the sound and the more extensive the dullness, the more severe and the more extensive was the disease. According to Auenbrugger, when the thorax is struck "slowly and gently with the points of the fingers, brought close together and at the same time extended," sounds are produced, and from the nature of the particular sound, "an opinion is formed of the internal state of the cavity."

When Auenbrugger's ninety-five page pamphlet appeared (1761), the great physiologist, Haller, welcomed it warmly as did one or two less known writers, such as Unzer. Most of the outstanding clinicians of the day, however, gave little attention to the invention of percussion. Van Swieten, Auenbrugger's teacher and one of the most distinguished physicians in Europe, ignored the work altogether; others, such as Vogel, Sprengel and de Haen maintained that there was nothing new in the method. Hippocrates, they said, had listened to chest sounds; Soranus and Alexander of Tralles had differentiated between ascites and tympanites through percussion. Hippocrates, it is true, had shaken patients by the shoulders and listened for the splash of liquid in the chest, but the succussion sounds of Hippocrates were not percussion sounds. Likewise, the abdominal percussion of the later Greek physicians had no relation to the thorax, the only body region with which Auenbrugger was concerned. In contrast with most of the master physicians of the time, a few men quietly used the method and saved it from oblivion. Among these were Maxmillan Stoll of Vienna, the Swiss physician, Zimmerman, and Reil of Halle. After a period of nearly fifty years in which percussion had been forgotten or unused throughout most of Europe, Corvisart, Napoleon's physician, reintroduced and recommended the method. He had learned the technic from Stoll, and, for many years, had practiced thoracic percussion of the heart. In his monumental study of the heart and blood vessels, which was probably the most elaborate investigation of both clinical and autopsy material which had yet appeared, the importance of percussion as a diagnostic method was emphasized. Through his students and by his translation (1808) into French of Auenbrugger's book, Corvisart raised percussion from an incidental and largely ignored method to one of first importance.

As percussion became more widely practiced throughout Europe, a second Frenchman, Pierre Adolphe Piorry, in 1826, chanced upon a modification of the percussion technic. In examining the chest of a fat patient in whom the chest sounds were obscure, he placed a large coin against the chest and, in percussing over the coin, found that the sounds became more distinct. He spoke of this method as mediate percussion. To aid in mediate percussion, Piorry devised a thin plate of fir-wood with a small handle which he called a plessimeter. Many varieties of plessimeter came into general use. In England, David Barry devised a little ebony hammer with which to tap the plessimeter, though it was not until 1841 that the use of the percussion hammer, as designed by Wintrich, became widespread. Four years earlier, Stokes had used his finger with the nail toward the chest as a substitute for a plessimeter, and, for many years, it was a point of controversy whether finger percussion or plessimetry were the better method. A later modification of the percussion technic was the palpatopercussion method of Ebstein.

Accompanying the spread of percussion in thoracic diagnosis during the nineteenth century, there arose a second auditory method of chest examination, mediate auscultation. This method was a modification of a very old but little used technic, namely the placing of the examiner's ear against the patient's body. Early in the past century, Corvisart and his pupil, Bayle, had on rare occasions listened to the heart-beat in this way. Mayer of Geneva, in 1818, had listened to the fetal heart-beat and thus had discovered the only certain sign of pregnancy previous to labor that was known for a hundred years. Immediate auscultation or the direct application of the ear to the body, however, was probably no more important than percussion during the three or four decades following Auenbrugger's publication.

René Théophile Hyacinthe Laennec, while attempting to listen for the heart sounds of

a patient, recalled the physical principle that sounds are readily transmitted over solid conductors. He rolled several sheets of paper into a tight cylinder to form a sound conductor and placed one end of it against the patient's chest. On placing his ear against the other end of the scroll, the heart sounds which had been obscured by layers of fat were quite distinct. Laennec studied this method of detecting thoracic sounds using tubes of wood, glass and metal, but concluded that wood was the best conducting medium. The instrument which he constructed and called the stethoscope was a foot long piece of wood, one and one-half inches in diameter with a quarter inch bore. The thoracic end was provided with a plug or obturator which could be removed to allow the bore of the instrument to subtend a greater area of the thorax. For ease in transportation, the instrument could be disconnected at the middle.

With his stethoscope, Laennec studied the sounds of the heart-beat, respiration and voice as they appeared in auscultation of the chest wall of both normal and diseased patients and published his researches in a large work dealing with mediate auscultation, chest disease and heart disease. He believed that the air in the lung was a poorer conductor of sound than the fluid or solid substance of other organs. The sounds of breathing and of the voice were transmitted differently to the stethoscope on the chest wall if the deeper chest structures were consolidated or surrounded by fluid than in the normal state. His studies on the nature and location of sounds in their relation to the physical diagnosis and pathology of the chest are exceptionally complete. Laennec's successors, for a time, did little to amplify the original work, though a tendency toward increasingly fine discrimination between chest sounds was evident. Fournet, in particular, attempted to find specific sounds for each part of the lung and to detect characteristic sounds for each type of disease.

In contrast with this tendency and specifically correlated with the methods of both percussion and auscultation was the critical survey made by the Viennese physician, Skoda. He maintained that the preference for finger percussion or the use of the plessimeter was secondary to the capacity of the physician to interpret percussion sounds. He furthermore modified Laennec's view that consolidated regions in the chest were conductors of sound, pointing out that voice sounds reverberate through the bronchi, are reflected by the bronchial walls and initiate sympathetic or consonant vibrations in the more dense regions. He recognized that many sounds which he called indeterminate had no clinical value, and he simplified the terminology of pulmonary sounds and râles. He also attempted to account for heart sounds and murmurs. Skoda's studies, in general, led to a simplification of stethoscopic methods which, in turn, resulted in an increased use of the instrument in general diagnosis.

Within fifty years of Laennec, the stethoscope evolved from a clumsy wooden tube to the modern type of instrument. First, the stethoscope was made lighter, having a narrow stem-like tube with expanded funnel-like extremities for application to the chest and ear. This type of instrument continued in use in Europe until the end of the century. Certain of these monaural stethoscopes were arranged in the seventies so that thermometers, percussion hammers or plessimeters could be carried as a single unit. (Occasionally, percussion and auscultation were combined by listening to the percussion sounds through the stethoscope.) Golding Bird was one of the earliest (1843) to connect the expanded aural and pectoral extremities of the instrument by a flexible tube. Shortly afterward, stethoscopes were designed so that chest sounds could be heard with both ears. Williams of London, for a time, used a stethoscope consisting of two metal tubes with flattened ear-pieces joined to a bell-shaped pectoral piece. Leonard, in 1851, had a double stethoscope consisting of two gutta-percha tubes between the chest piece and ear-pieces. The ear-pieces were kept in place by the elasticity of the tubes. Cammann of New York placed a spring between the tubes to hold the stethoscope to the head and devised ear knobs to fit into the auditory meati. The modern instruments are but modifications of the Cammann model. The addition of a rim of soft rubber to the chest piece allowed the instrument to fit the convexity of the chest better. Other instruments, such as that of Scott Alison, having two chest pieces, and the stethoscopes designed to adhere to the chest wall through suction devices, have proved to be of transitory value, as have those designed for more than one listener. For a time, clinicians differed as to the relative importance of the early monaural type of stethoscope and the binaural instruments. The insistence of

Austin Flint and others that two ears were better than one eventually led to the widespread adoption of the binaural instrument.

At present, mediate auscultation through the use of the stethoscope and percussion involving the use of the plessimeter or the finger are routine methods with which every physician is acquainted. Though the clinical laboratories during the past half century have introduced new methods for the diagnosis of chest diseases, it seems likely that such methods will never supplant the preliminary or bedside methods of examination which percussion and auscultation provide.

—W. L. D.

LEST WE WAKE UP

(DR. G. S. GORSLINE in *Calhoun County Medical Bulletin*)

"It is not a question at the moment as to whether the doctors are favorable to health insurance, but in view of the fact that certain very questionable developments are apparent in other states and in view of the further fact that, from past experience, we may well be afraid that we as a profession will suddenly awaken some day to the fact that we have been handed a piece of ill-advised legislation and that the laity or the politicians, or both, have placed a collar about our professional necks and are leading us in any direction that their whim may indicate. If by study and early experiment we are forearmed with knowledge and will stand united behind our officers, such conditions as above indicated need not happen."

HONORING THE DOCTOR

(Detroit News)

A throng of Oceana County men and women filled the auditorium of the Shelby High School one evening last week to express their regard for the physician who had brought them into the world. Not all of Dr. William L. Griffen's "babies" could be present—he counts 3,800 altogether, many of them are grandfathers and grandmothers now. But enough appeared to make the occasion distinctly impressive. It was a deserved tribute, one which probably could be given appropriately by similar groups to many other veteran general practitioners scattered up and down the land.

Doctors who make careers out of helping meet the familiar crises of birth and death, sickness and injury among their neighbors can be found in all communities, big and little. They serve faithfully, often obscurely, and with too little reward. Only occasionally, as at Shelby, do the patients and "babies" of such a man awaken to realization of the gratitude they owe for a life of service.

FEAR OF "STATE MEDICINE"

(The United States News)

Fear of "state medicine" or of public control of the medical profession are grounds of opposition offered by physicians and medical organizations in a number of States to programs for providing medical care from public funds as relief measures. This situation is reported by the American Public Welfare Association, which is coöperating with the Julius Rosenwald Fund in a survey of this phase of public relief.

The Federal Emergency Relief Administration inaugurated the Federal relief plan last year; already millions on the relief rolls are receiving free care. In twenty-one States the FERA plan has been adopted for caring for teeth, eyes and general health; ten other States have continued their own systems of medical care for the poor.

Delays in the work, caused by conflicts between relief authorities and the medical profession, are reported from nine States. In two of these States, coöperation on the basis of a payment plan has been refused on the grounds set forth. Taxpayers also are frequently resistant of making the community responsible for health care.

PREVENTION

'Twas a dangerous cliff, as they freely confessed,
  Though to walk near its crest was so pleasant;
But over its terrible edge there had slipped
  A duke and full many a peasant.
So the people said something would have to be done,
  But their projects did not all tally.
Some, "Put a fence around the edge of the cliff,"
  Some, "An ambulance down in the valley."

But the cry for the ambulance carried the day,
  And it spread through the neighboring city;
A fence may be useful or not, it is true,
  But each heart became brim full of pity
For those who slipped over the dangerous cliff.
  And dwellers in highway and alley
Gave pounds or gave pence, not to put up a fence,
  But an ambulance down in the valley.

Then an old sage remarked: "It's a marvel to me
  That people give far more attention
To repairing results than to stopping the cause,
  When they'd better aim at prevention.
"Let us stop at its source all this mischief," cried he,
  "Come neighbors and friends, let us rally;
If the cliff we will fence, we might almost dispense
  With the ambulance down in the valley."

"O, he's a fanatic," the other rejoined;
  Dispense with the ambulance? Never!
He'd dispense with all charities, too; if he could.
  No, no, we'll support them forever!
Aren't we picking up folks just as fast as they fall?
  And shall this man dictate to us? Shall he?
Why should people of sense stop to put up a fence,
  While the ambulance works in the valley?

—JOSEPH MALINS in *The Public.*

SURGICAL TREATMENT OF INGROWN TOENAILS

E. LAWRENCE KEYES, St. Louis, presents the results of surgical treatment of ingrown toenails in 110 operations performed by twenty-six different surgeons in three separate institutions. He observed that the rate of recurrence of ingrowth of the nail following operation is high and that the rate of healing of many of the operative wounds is prolonged. The rate of recurrence was 13.6 per cent. The operative wounds required an average of nineteen days to heal. Recurrences were attributed either to the performances of an operation inadequate in type or to failure at operation to remove the necessary amount of nail-bearing matrix or of nail wall. No recurrence could be ascribed to growth of new nail from eponychium. Since the eponychium ordinarily was not excised at operation, this structure would seem to lack the nail-forming function attributed to it by some authors.—*Journal A. M. A.* (May 5, 1934).

DRS. McLEAN, BIDDLE AND CAMPBELL FÊTED

A pleasant feature of the Annual Alumni Clinic day of the Detroit College of Medicine and Surgery, now the Medical Department of the Wayne University, was the complimentary dinner honoring Drs. Angus McLean, Andrew P. Biddle and Don M. Campbell, three of the most prominent alumni of the College whose careers ran almost parallel for about half a century. The large ballroom of the Statler Hotel, Detroit, was well filled in honor of the occasion. Dr. J. M. Robb, president of the Alumni Association, acted as toastmaster. Suitable music was rendered by two pipers in Highland costume, Templeton Moore, tenor, Harry McDonald, baritone, accompanied by Dr. Frank MacKenzie at the piano. Dr. James Inches proposed the toast to the three whom the chairman designated "the three musketeers." Dr. Inches was in good vein and in a reminiscent mood. He recalled the careers of the three guests of honor. He referred to the humble beginnings of all three who were content with salaries from two to twelve dollars a week for the first two or three years of their professional careers. From these humble beginnings the careers of all three have been marked with steady progress which placed them at the head of the medical profession and made them nationally known. He spoke also of the lifelong friendship that existed among them unmarred by any cloud of dissension; of their mutual assistance to one another, of their capacity for friendliness that makes friends of all with whom they come in contact. Dr. McLean, he said, never missed a chance to do a friend a favor. He spoke of Dr. McLean's career, first on the health commission of the city and his record on the board of education in which both he and Dr. Biddle had worked together for the unification of the educational factors of Detroit which had culminated in the establishment of the Wayne University. Dr. McLean had been the recipient of many honors both civic and military. Three times he had attended the International Congress of Military Surgeons. He spoke of Dr. McLean's career as a surgeon and as a preceptor whose influence produced many surgeons among the younger men.

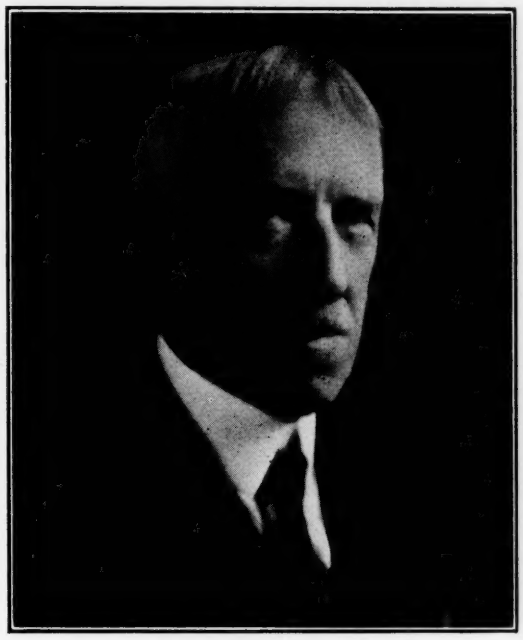
Dr. Don M. Campbell through his ability and personality has achieved the largest eye, ear, nose and throat practice in the United States. As a teacher of ophthalmology he has few equals.

Dr. Biddle's career was marked by extreme patriotism. During the past one hundred years, Dr. Inches went on to say, there was not an instance in which Dr. Biddle had not an ancestor or contemporary relative in service either in the United States army or navy. Dr. Biddle had himself attended West Point looking forward to a military career. His dreams were carried out in the traditions of his family. Dr. Biddle had been President of the Michigan State Medical Society for two terms, namely 1917-1918. Professionally he has conferred upon him the highest office in the gift of his specialty, namely, president of the Dermatological Society of the United States. He also enjoyed the unique distinction of being the first interne in Harper Hospital.

As a matter of record we have here printed a summary of the careers of the three distinguished guests. After the address of Dr. Inches each of the three responded in a suitable manner.

Dr. Andrew Porter Biddle

Andrew P. Biddle, a native of Detroit, was born February 25, 1862. He attended schools at Grosse Ile, Geneva, Switzerland, Heidelberg, Germany, and the old Detroit High School which was situated in Capitol Square. Following in the footsteps of a long line of military and naval ancestors, he entered the U. S. Naval Academy at Annapolis, Maryland, in 1880, but did not finish because of eye trouble. Returning to Detroit he took up the study of medicine, graduating from the Detroit College of Medi-



DR. ANDREW P. BIDDLE
1916-1918.
President, Michigan State Medical Society,

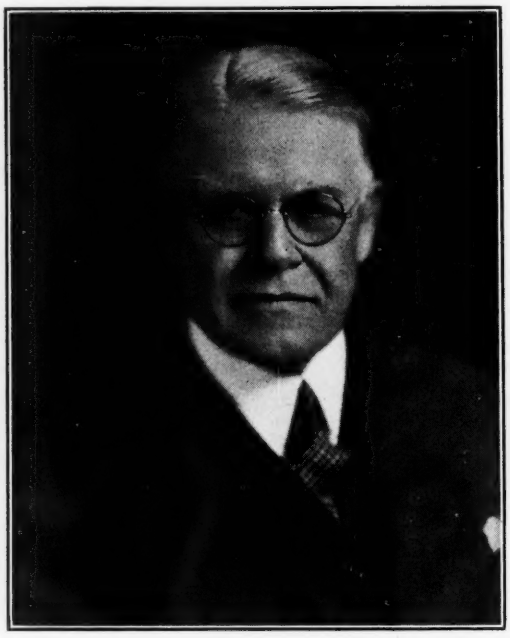
cine with the class of 1886. He was the first interne at Harper Hospital, serving from 1885 to 1887. Dr. Angus McLean was his assistant, beginning his interneship in 1886. In 1887 he became associated with Dr. J. B. Book, who was then Police Surgeon.

Five years later, in 1892, he joined the Faculty of the Detroit College of Medicine as Assistant to the Chair of Dermatology and served in various positions until he reached the chair of Professor Emeritus of Dermatology in 1917. Rising through the various ranks of service he is now consultant on the medical staffs of the Receiving Hospital, Woman's Hospital, Children's Hospital of Michigan, St. Joseph's Mercy Hospital, the Protestant Children's Home of Detroit, and to the Board of Health of the City of Detroit.

In keeping with the traditional family interest in military and naval affairs (two brothers are graduates of West Point), he served for many years in the Michigan National Guard. When the National Guard rendezvoused at Island Lake on the declaration of War with Spain in April, 1898, he was commissioned Major and Surgeon of the 31st Regiment, Michigan Volunteer Infantry, by Governor Hazen S. Pingree and served with the regiment, the first to leave the state, during the severe epidemic of typhoid fever at Camp George H. Thomas, Chickamauga Park, Georgia. From 1892 until 1897 he was U. S. Pension Examining Surgeon under appointment from President Cleveland.

Always active in civic affairs, he was appointed a member of the State Board of Health, 1913-1919, by Governor Ferris (through the insistence of Dr. Angus McLean) and from 1917 until 1925 he served on the Board of Education, being its president in 1918-1919. In 1925 he was appointed a member of the Detroit Library Commission, serving up to the present time.

Interested in the advancement of his profession he was secretary of the Michigan State Medical Society, 1900-1906; then as counselor and in 1916-1918, as president, being the only man to serve two terms as president. He was active in enlisting the physicians of the State for service in the World War. He was the first editor of the JOURNAL of the Michigan State Medical Society from 1902-1906.



DR. DON M. CAMPBELL

He is a member of the Wayne County Medical Society, the Michigan State Medical Society, the American Medical Association; a fellow of the Detroit Academy of Medicine (president 1911-1912, Fellow of the American College of Physicians, member of the Detroit Dermatological Society (first president 1922), the Chicago Dermatological Society, and the American Dermatological Association. The latter body, in making Dr. Biddle their president in 1925-1926, bestowed upon him the greatest honor an American dermatologist can obtain.

He is a member of the Naval and Military Order of the Spanish American War (Commander of the Michigan Commandery, 1927), a member of the Hazen S. Pingree Camp, a Companion of the Military Order of Foreign Wars.

Because of this interest in education which included thirty years of teaching and eight years on the Detroit Board of Education, the College of the City of Detroit in 1929 conferred upon him the honorary degree of Doctor of Science. For many years he has urged the creation of a University from the various colleges run by the Detroit Board of Education, and was able to see this done when Wayne University was established within the last year.

Dr. Don M. Campbell

Don M. Campbell was born at Wardsville, Ontario, and received his preliminary education at the Windsor Collegiate Institute. He graduated from the Detroit College of Medicine in 1885, a year before Drs. Biddle and McLean. He too interned, choosing the Emergency Hospital, then located at Gratiot and St. Antoine. After the interneship he took postgraduate work in Edinburgh and London. At Edinburgh he came under the influence of Dr. Joseph Bell, a remarkable diagnostician, under whom Conan Doyle also served and who became the inspiration for the fictional character Sherlock Holmes. Dr. Bell had exceptional powers of observation and deduction, and many stories are told about him. Because a man in his clinic stood with his hat on, erectly, and answered questions directly and in respectful tones Dr. Bell expressed the conclusion that he had been recently discharged from the army, that he had served twenty years or so and from other observations told where he had served. The man confirmed each deduction.

Dr. Campbell was the first graduate of the Detroit College of Medicine to receive the L.R.C.S. and L.R.C.P. given by the Royal Colleges at Edinburgh where he also was an honor student.

Returning to Detroit he started practice with Dr. C. J. Lundy in 1887, which relationship was continued until 1890, when Drs. Biddle, McLean and Campbell opened a combined office. This relationship was continued for fifteen years.

Dr. Campbell has taught at his Alma Mater for forty years and since 1892 has been Professor of Ophthalmology and Head of the Department of Ophthalmology. He is the dean of his specialty in this region and has been preceptor to an unusually large group of men training for special practice in the eye, ear, nose and throat field. In this manner his office has given postgraduate, special education to the entire state. His undergraduate courses have always been very popular and unusually instructive. He has a happy faculty of establishing friendship with his students and many a student has left his class feeling that he had a personal friend on the faculty after hearing Dr. Campbell start an explanation with his oft-used phrase, "My Boy."

He has been a member of the Wayne County Medical Society since 1887 and was president in 1914-1915. He is a member of the Michigan State Medical Society, the American Medical Association, the Detroit Academy of Ophthalmology and Otolaryngology, the American Oto-Rhino-Laryngological Society, and the American Otologic Society.

He is consultant at Harper, Receiving, Woman's, and Detroit Eye, Ear, Nose and Throat Hospitals. He recently received the honorary degree of Doctor of Science from the College of the City of Detroit.

Dr. Angus McLean

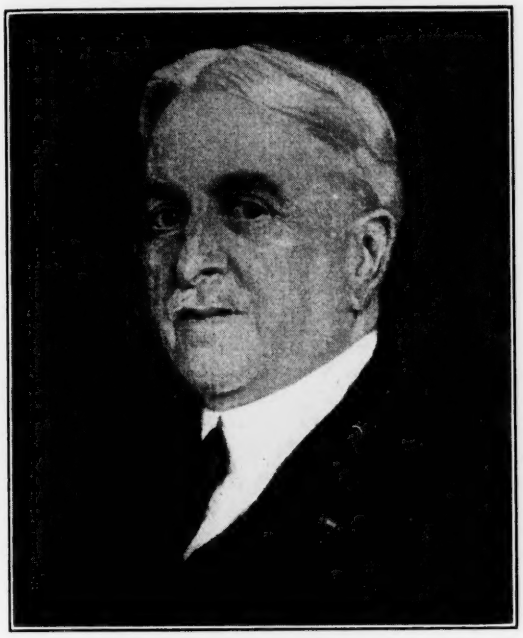
Angus McLean was born in St. Clair County, Michigan, April 4, 1862, the son of Donald M. McLean. He graduated from the Collegiate Institute of Strathroy, Ontario, in 1880 and from the Detroit College of Medicine in 1886. He interned at Harper Hospital, where he served under Dr. Biddle in 1886 and 1887. In 1888 he started in practice with Dr. H. O. Walker, one of the foremost surgeons of the time. Later he practiced with Dr. J. B. Book and then took postgraduate work in Edinburgh.

From 1888 to 1891 he was City Physician; in 1893 he was appointed by President Cleveland Quarantine Inspector for the Port of Detroit. From 1895 to 1901 he was Police Surgeon; from 1905 until 1913 he was Professor of Clinical Surgery at the Detroit College of Medicine. In 1905 Governor Warner appointed him to the State Board of Health, where he served until 1911, and he was appointed to the Detroit Board of Health by Governor Ferris and served until he went overseas. He was Attending Surgeon to Harper, Providence, and Children's Hospitals for many years.

He has been elected to the Detroit Board of Education many times and has served with great benefit to the schools.

Doctor McLean has a notable war record. He organized the Harper Hospital unit which became Base Hospital Number 17 and was its Commanding Officer. He was sent to Italy by the Surgeon General as President of the Medical Commission to the

Italian Armies. He received citation by the Adjutant General of the U. S. Army for heroic work in the A.E.F. By appointment he was Special Surgeon to the Peace Commission in France and was detailed by General Pershing to accompany President Wilson home in February, 1919. In 1919 he received



DR. ANGUS MCLEAN
President, Michigan State Medical Society, 1920

a Diploma of Honor for services at Dijon and was recommended for the Legion of Honor by the French Government. In 1921 he received the Distinguished Service Medal from Congress and was made Corps Surgeon of the 16th Army Corps of the 6th Corps Area. In 1929 he was one of four delegates to the Fifth International Congress of Military Medicine at London by appointment of President Hoover and he attended many other conventions in Europe that year.

In 1928 a reunion of Base Hospital Number 17 was made a tribute to him, at which time he received expressions of esteem and affection from large numbers of his associates, including General Pershing and the Governor of Dijon.

Among the honors he most treasures are his Distinguished Service Medal, Knight of the French Legion of Honor, Honorary membership in the Federation of Soldiers and Sailors of France, the formal thanks of the German Red Cross, and the Medal from the Military College of Medicine and Surgery of the University of Warsaw that is the emblem of Fellowship in the Polish Brotherhood of Military Surgeons. Dr. McLean was elected Honorary Professor of Military Surgery in this school while serving as delegate from the United States to the International Congress of Medicine and Pharmacy held in Warsaw in 1927.

This medal was presented by W. Kozlowski, Polish Consul at Detroit, at a meeting of the Wayne County Medical Society. At that time a tabulated list of Dr. McLean's military honors was given by Dr. Biddle. Among these were included letters from Surgeon General Ireland regarding treatment of British troops, mentioning six hundred handled with one death, and from King George.

Dr. McLean is a member of the Wayne County Medical Society, the Michigan State Medical Society, the American Medical Association, and a Fellow of the American College of Surgeons. He has been president of the Wayne County and the Michigan State Societies (1920). In 1921 he organized the Academy of Surgery of Detroit and was its first president.

Many of the most capable surgeons in the state have trained under Dr. McLean and many of the hospital staffs are headed by his former assistants. His office, like that of Dr. Campbell, has been a veritable postgraduate school. He has been a frequent contributor to the literature of surgery and has profoundly influenced the profession in his community.

MICHIGAN'S DEPARTMENT OF HEALTH

C. C. SLEMONS, M.D., Dr.P.H., Commissioner
LANSING, MICHIGAN

THE CHILD HEALTH NURSING PROJECT

The special child health nursing project begun in Michigan on February 1, 1934, under the CWA, to continue for two months, ended on April 1, except in the case of 20 nurses who were given an extension of time of two weeks to enable them to complete immunization and vaccination programs.

The project had as its objective the improvement of child health with special reference to nutrition, and the relief of unemployment among nurses. One hundred and seven nurses were employed, ninety-nine nurses and eight supervisors. They worked in 79 counties on programs planned to meet the needs of the communities. Where possible, the nurses were assigned to a county health department or to a county nurse, their work to supplement that of the regular unit. Assistance in supervising the state program was given by the entire field staff of nurses of the Bureau of Child Hygiene and Public Health Nursing of the State Department of Health.

The promotion of nutrition of children, especially of children in families on relief, was the primary objective of the project, but any phase of child health that needed attention in a particular community was included in the work. With the exception of assistance to the local physicians in the immunization, vaccination, and tuberculin testing programs, the work done by the nurses was entirely educational. It was based largely upon home calls. Among the figures given in the tabulated report of the project, the following are particularly significant:

24,458 homes visited
10,194 children tuberculin tested (work done by local physicians and positive tests followed by x-rays)
8,736 children vaccinated against smallpox
18,772 children given complete diphtheria immunization, two treatments each.

The response to the child health nursing project was very gratifying. Not only was the nursing service appreciated by the parents of the children helped, but the county relief administrators found the assistance given by the nurses exceedingly valuable. At least eight counties have continued the service temporarily under county relief funds, and in one county the board of supervisors assumed the expense of carrying on the service for an additional month. It, temporarily at least, aided the nurses also, since all of the county nurses were unemployed.

LABORATORY CONTAINERS TO BE REPLACED

Physicians who have been inconvenienced by the loss in the mails of specimens sent to the laboratories of the Michigan Department of Health will welcome the announcement that the present containers are to be replaced as rapidly as possible by the type formerly used.

The containers now in service, adopted because of their inexpensiveness, have failed to stand up under mailing and will be discarded in favor of the type with the tin screw top. These do not allow specimens to be lost out.

RESORT INSPECTION

The only resort inspection work that will be carried on this summer will be that done by local officials. The resort sanitation program that has been been a part of the special summer program of the Bureau of Engineering of the Michigan Department of Health will not be possible this year because of lack of appropriation.

The highway water inspection work that has had as its objective the safeguarding of drinking water supplies used by motorists will also be suspended for this year.

GENERAL NEWS AND ANNOUNCEMENTS

Dr. W. T. Dodge of Big Rapids died June 8.

Dr. J. F. Carrow of Cadillac has relocated in Marion.

The Postmaster at Fife Lake in Grand Traverse County reports an opening for a physician.

Dr. Grover C. Penberthy of Detroit has been elected a member of the American Surgical Association.

The preliminary program for our annual meeting in Battle Creek, September 11-13, will appear in the August issue.

Dr. W. G. German, pathologist at Blodgett Hospital, Grand Rapids, sailed June 1 for two months' post graduate work in Europe.

The program for the annual meeting of the Upper Peninsula Medical Society will be found in the space devoted to Society Activities.

Scientific exhibits are solicited for the Battle Creek annual meeting. Kindly advise the State Secretary as to amount of space you desire.

Please read the advertising section of each issue and give preference to the advertising firms who patronize you. To gain this income your support is necessary.

The following county societies publish County Bulletins imparting programs of meetings, reports and local activities: Muskegon, Oakland, Jackson, Ingham, Berrien, Bay, Kalamazoo, Kent, Wayne and Calhoun.

By invitation, Dr. F. C. Warnshuis will deliver an address on "Problems and Trends in Medical and Dental Economics" at the general session of the annual meeting of the American Dental Association in Saint Paul on August 8.

At the Cleveland A. M. A. meeting the following officers were elected: Dr. J. S. McLester of Alabama, president-elect; Dr. George G. Reinle, California, vice president; Drs. Olin West, H. L. Kretschmer and F. C. Warnshuis, respectively, secretary, treasurer and speaker. Atlantic City was selected for the 1935 meeting place.

At the election for the Ontario legislature June the nineteenth, eleven physicians were among the successful candidates. This is twelve per cent of the total membership. What a wholesome influence might follow if twelve per cent of the members of the Michigan State legislature were able and influential members of the Michigan State Medical Society.

Detroit has been the place of meeting of two National Medical Associations during the same week. The American Institute of Homeopathy and the National Eclectic Medical Association held their annual meetings during the week June eighteenth to the twenty-second. The American Institute of Homeopathy was founded ninety years ago. The sessions, according to accounts in the daily press, were concerned with problems of a social and economic nature largely as well as methods of practice peculiar to each.

THE AMERICAN COLLEGE OF PHYSICIANS

The American College of Physicians will hold its Nineteenth Annual Clinical Session in Philadelphia, April 29-May 3, 1935. Announcement of these dates is made particularly with a view not only to apprising physicians generally of the meeting, but also to prevent conflicting dates with other societies that are now arranging their 1935 meetings. Dr. Jonathan C. Meakins, of Montreal, Que., is president of the American College of Physicians, and will arrange the program of General Sessions. Dr. Alfred Stengel, vice president, in charge of medical affairs of the University of Pennsylvania, has been appointed general chairman of local arrangements, and will be in charge of the program of Clinics. Mr. E. R. Loveland, executive secretary, 133-135 S. 36th Street, Philadelphia, Pa., is in charge of general and business arrangements, and may be addressed concerning any feature of the forthcoming session.

POSTGRADUATE REGISTRATION

Attendance at the postgraduate courses recently given at Ann Arbor and Detroit was marked by the registration of the following doctors in the courses indicated:

Diseases of Metabolism

Ann Arbor, Michigan

May 14-18, 1934

Dr. Frederick W. Bald, Flint, Mich.
Dr. W. E. Barstow, St. Louis, Mich.
Dr. Frederick J. Burt, Holly, Mich.
Dr. C. S. Czarnecki, Toledo, Ohio
Dr. J. S. DeTar, Milan, Mich.
Dr. Robert S. Drews, Detroit
Dr. Hugh S. Foley, Dearborn, Mich.
Dr. C. R. Gatley, Pontiac, Mich.
Dr. M. R. Hannum, Milan, Mich.
Dr. Don V. Hargrave, Eaton Rapids, Mich.
Dr. L. Mae James, Detroit
Dr. J. F. McCann, Youngstown, Ohio
Dr. Arthur A. McNabb, Lawrence, Mich.
Dr. Chas. G. Miller, Sturgis, Mich.
Dr. F. W. Morley, Toledo, Ohio
Dr. M. W. Neidus, Youngstown, Ohio
Dr. Elizabeth N. Newcomb, Carleton, Mich.

Dr. A. W. Petersohn, Battle Creek, Mich.
Dr. C. S. Sanborn, Windsor, Ont., Canada
Dr. Alden G. Sheets, Eaton Rapids, Mich.
Dr. C. M. Spencer, Scottville, Mich.
Dr. B. R. Sleeman, Linden, Mich.

Gynecology, Obstetrics and Gynecological Pathology

Detroit, Michigan

June 4-8, 1934

Dr. R. Bailey, St. Clair Shores, Mich.
Dr. M. S. Ballard, Grand Rapids
Dr. G. R. Cheatham, Johnson City, New York
Dr. Peter H. Darpin, Detroit
Dr. H. D. Giles, Columbus, Ohio
Dr. J. I. Humphries, Windsor, Ont., Canada
Dr. L. Mae James, Detroit
Dr. J. A. Wm. Johnson, Newton, Iowa
Dr. Sabina Kessler, Bay City, Mich.
Dr. L. D. MacRae, Gagetown, Mich.
Dr. J. A. McLandress, Saginaw, Mich.
Dr. Edw. Mead, Detroit
Dr. George R. Norton, Birmingham, Mich.
Dr. A. W. Petersohn, Battle Creek, Mich.
Dr. R. R. Scott, Ludington, Mich.
Dr. T. I. Walton, Bryan, Texas
Dr. H. L. Williams, Norwalk, Ohio

Proctology

Detroit, Michigan

May 28-June 2, 1934

Dr. Fred Beekel, Cleveland, Ohio
Dr. Eugene S. Browning, Grand Rapids
Dr. Haviland Carr, Covington, Kentucky
Dr. Hector M. Chabut, Jackson, Mich.
Dr. Emor L. Cartwright, Fort Wayne, Ind.
Dr. Guy W. DeBoer, Grand Rapids
Dr. E. Donald, Miami, Florida
Dr. Lynn A. Ferguson, Grand Rapids
Dr. Neil A. Gates, Ann Arbor
Dr. Howard B. Hoffman, Ludington, Mich.
Dr. J. F. Heffernan, Carleton, Mich.
Dr. L. Mae James, Detroit
Dr. George W. Leitch, Milwaukee, Wis.
Dr. Harry Lieffers, Grand Rapids
Dr. Edward D. Maire, Grosse Pointe, Mich.
Dr. P. G. Mainzer, Erie, Penna.
Dr. Howard H. McNeill, Pontiac
Dr. Carl R. Martin, Fountain City, Tenn.
Dr. A. W. Petersohn, Battle Creek, Mich.
Dr. Donald A. Pollock, Yale, Mich.
Dr. Herman G. Rosenblum, Flint, Mich.
Dr. Manuel G. Spiesman, Chicago, Ill.
Dr. Ralph V. St. John, Grand Rapids
Dr. Lawrence E. Turton, Worthington, Ohio
Dr. Frank O. Votey, Grand Rapids

OBITUARY

DR. E. F. PARTELLO

Dr. Edward F. Partello of Detroit died June seventeenth. He was born in Washington, D. C., May 19, 1865, and obtained his medical degree from the University of Chicago. He served as a physician in the Spanish American War with the American Red Cross and later was physician for Ringling Brothers' Circus. He came to Detroit twenty years ago from Grand Rapids, and from 1918 until about 1929 was house physician for the Kunsky Theaters. He was a member of the Wayne County Medical Society. Survivors are his wife, Charlotte W., and five sons, Egerton, Frank, Clinton, Clyde, and Howard.

DR. GEORGE O. PRATT

Dr. George O. Pratt, for nearly thirty years a Detroit physician, died June 5, 1934. Dr. Pratt was born in Pontiac, July 12, 1866. He came to Detroit as a child and was educated there. After pursuing the retail drug business for nearly twenty years he studied medicine and was graduated from the Detroit College of Medicine in 1905. He continued the practice of medicine until about two years before his death when he became ill. He was a member of the Michigan State and Wayne County Medical Societies. He leaves his wife, Mrs. Alice Pratt, and three children, Dr. George K. Pratt of New York City, and Miss Elizabeth and Glenn B. Pratt, of Detroit.

OF GENERAL MEDICAL AND SURGICAL INTEREST

THE RESTORATION OF THE GENERAL PRACTITIONER

Dean Lewis, Baltimore, points out that during the economic depression the general practitioner (consultant) has fared better than the specialist, for more people have discovered that they could be treated in their homes; his overhead has not been high. Many consultants have changed their point of view and have condescended to make house calls. So, as far as medicine is concerned, the economic depression has automatically restored some of the old order. The author believes that the restoration of the doctor should begin in the medical school as he should know how to make a diagnosis, he should know the natural course of disease and how to observe it, and he should know what therapeutic measures should be instituted to meet the indication and when they are to be employed. During the past few years, emphasis has been laid on the laboratories. This was necessary because such rapid strides had been made in biochemistry, biophysics, bacteriology and the histologic examination of tissue. The laboratories have been obtained and now more stress should be laid on the clinic. More clinical material is required, for in modern medical teaching the technic of diagnostic procedures is no longer simply demonstrated; but they are learned by the students and practiced by the student until these procedures can be used independently. In teaching hospitals an endowment should provide the required number of free beds and the patient should be the patient of the student, who under strict supervision can assume charge. This is not possible under any scheme in which the patient pays full or half rates. The medical training which many students now receive makes the doctor dependent on hospitals, laboratories, technicians, nurses, consultants and specialists. These distinctly influence the attitude of students and have a deciding influence in the development of specialism. The importance of physical examinations cannot be overemphasized, for the student of medicine who observes well, percusses well, hears acutely and feels intelligently has advanced far in the way of diagnostic ability. With a due apportioning of diligence, the essentials of anatomy, physiology and pathology can be mastered. During the brief years of pupilage the details of the various branches cannot be grasped so that all cases can be accurately diagnosed and successfully treated. A deep knowledge of pathology is the foundation stone of diagnostic ability. Every effort should be made to bring these practitioners into contact with hospital facilities. Unfortunately, at the present time many of these men from the day they begin practice are excluded from hospital services. The medical profession is largely to blame for the development of specialism and the eclipse of the doctor, for during the past few years the patient has been educated to be-

lieve that the specialist is the last word, and as a result patients consult specialists first rather than the doctor. The licensing of specialists or the recognition of certain qualities which specialists should have will limit considerably their number and increase the number of doctors.—*Journal A. M. A.* (March 31, 1934).

MEDICINAL TREATMENT OF COMMON COLD

Harold S. Diehl, Minneapolis, shows the relative values of various drugs and drug combinations in the treatment of 1,039 cases of acute coryza, 262 cases of subacute or chronic colds, 114 cases of influenza and 53 cases of acute pharyngitis. Of the drugs studied only opium and certain alkaloids derived from it seem to be of value in the treatment of acute coryza. Combinations of papaverine with codeine, papaverine with dilaudid, and papaverine with morphine were followed by "definite improvement" in from 74 to 78 per cent of the cases. For general use a combination of codeine and papaverine seems most desirable because of the high percentage of good results obtained with it, its low toxicity, and the absence of danger, or at least of "practical danger," of habituation to it. Morphine and dilaudid (dihydromorphinone hydrochloride) alone were followed by definite improvement in nearly as large a proportion of cases (73 and 72 per cent, respectively) but each was distinctly more toxic alone than when combined with papaverine. Codeine, papaverine, powdered opium, and powder of ipecac and opium, were followed by definite improvement in from 56 to 61 per cent of cases. The toxicity of these drugs is in the following order: codeine, powdered opium, powder of ipecac and opium and papaverine, with codeine practically as toxic as morphine. Powder of ipecac and opium, although of value in the treatment of acute colds, is no more beneficial than the same amount of powdered opium without the ipecac. Sodium bicarbonate, acetylsalicylic acid and a combination of acetylsalicylic acid-acetphenetidin-caffeine give little if any better results in the treatment of acute coryza than the lactose tablet used as a control, each being followed by definite improvement in from 35 to 42 per cent of cases. A computation, based on incomplete reports of time lost from their usual activities by patients who received the various medications suggests that it may be possible with codeine-papaverine or dilaud-papaverine combinations to reduce materially the amount of time lost as a result of acute colds. None of the medications studied seem to be of benefit in subacute or chronic colds. Morphine was tried in influenza but was of no value. The number of cases of pharyngitis treated were too few to justify conclusions, but none of the drugs seemed of value.—*Journal A. M. A.*

THE TEACHING OF INDUSTRIAL HYGIENE

Leverett D. Bristol, New York, states that of eighty-five medical and public health schools in the United States and Canada covered in his study, information has been received from sixty-six with reference to the teaching of industrial hygiene; of the sixty-six, only thirteen schools give separate courses in industrial hygiene; twenty-four medical schools assign one or more separate lectures to industrial hygiene in their general public health or hygiene courses; eighteen schools give only brief attention to industrial hygiene, and another twenty-one, together with a number of schools unheard from, apparently give no instruction in this subject. Field visits to industrial plans for inspections and surveys should be to the teaching of industrial hygiene what hospital ward rounds are to the teaching of clinical medicine; fifteen schools report that they make such field trips available. Medical and public health schools that give instruction in this subject should cultivate the friendly coöperation of local industries in order to enhance their facilities for field training of students in industrial hygiene. Instruction in industrial hygiene, including industrial medicine, industrial sanitation, industrial toxicology and other subjects, at least in graduate schools of public health and when economically feasible, should be organized under one separate, independent department of industrial hygiene with a fulltime professor as coordinator and director. He should be a physician with experience in industrial health administration, and in the larger universities he might also serve as the director or teacher of courses on this subject in medical, nursing, business or other schools. Detailed subject matter and methods of teaching industrial hygiene must be based on local conditions, facilities and needs as well as on knowledge of the elements of an adequate industrial health program. Industrial hygiene should involve primarily a program of health conservation and of disease and accident prevention. It is a matter of preventing the common diseases and mishaps of adult life and of building up positive health and encouraging the development of proper health habits among working people in general. Industrial hygiene, including industrial medicine, will become what physicians and medical educators help the business man and industrial worker to make it. In this connection, opportunities and responsibilities are unlimited for the development of the right sort of leadership among future generations of medical students.—*Journal A. M. A.* (March 31, 1934).

ABDOMINAL PAIN: II. THE SENSITIVE REGIONS IN THE ABDOMEN AND WAYS IN WHICH THEY MAY BE STIMULATED TO PRODUCE PAIN

WALTER C. ALVAREZ, Rochester, Minn., points out that the main sensory pathways out of the upper part of the abdomen lie along the major splanchnic nerves. Most of the sensory nerves in the abdomen probably do not belong to the autonomic system and are no different from those in the rest of the body. Evidence is accumulating to show that certain types of severe and intractable pain are due to some abnormality in the sympathetic nerves. The abdominal viscera are insensitive to such stimuli as cutting, crushing and burning. The few sensory nerve endings present are associated mainly with arteries. The parietal peritoneum is well supplied with nerves. If a stimulus to an abdominal organ is to be sensed as pain, it must be applied over an area wide enough to affect many of the scattered nerve endings. Much of the pain produced by distention of the intestine appears to be due to tension on the root of the mesentery. The stomach is normally so insensitive to acids and other irritants that it is difficult to explain the pain of ulcer. As yet no one of the explanations proposed is adequate or satisfying. The salient fact is that at times the nerves appear to become so sensitized that pain can be felt even in the absence of strong acid or of a defect in the mucous membrane of the stomach and duodenum. Pain is produced in a hollow organ when powerful contractions struggle to force material past an obstruction; it is produced also by rapid distention or by tension on the mesentery. The distribution of sensory nerves in the abdomen follows somewhat the original segmental arrangement existing in the embryo. For this reason pain that arises in the stomach,

duodenum and gallbladder is usually felt above the navel, and pain arising in the colon is usually felt below the navel. This point is helpful in diagnosis. Pain arising in the appendix itself is usually felt around the navel, while pain arising in the peritoneal covering of the organ or in the cecum is felt in the right lower quadrant of the abdomen. Long continued pain and soreness around the cecum should suggest the presence not of appendicitis but of chronic perityphlitis, or typhlitis, or of disease somewhere along the parietal (not mesenteric) sensory nerve tracts supplying the cecal region. The mechanism of biliary colic is not clear. Such colic is seen in the absence of gallstones, in the absence of a gallbladder and, rarely, even in the absence of most of the common bile duct. Experimental distention of the gallbladder usually does not produce pain, but distention of the ducts does produce pain. What is puzzling is that, in most of the experiments that have been done, this pain has not radiated typically to the right scapula. The solid organs of the abdomen are so insensitive that the only thing that seems to cause pain in them is either rapid distention of the capsule or the extension of inflammation from them to adjacent parietal peritoneum. Some forms of abdominal pain are due to the accumulation of irritant metabolites or toxins in the tissues. Pain may also be caused by any disease or spasm in arteries which leads to injury of the tissues through the development of ischemia.—*Journal A. M. A.* (April 28, 1934).

THE DOCTOR'S LIBRARY

MEDICAL CLINICS OF NORTH AMERICA. (Issued serially, one number every other month.) Volume 17, Number 6. Chicago Number, May, 1934. INDEX VOLUME. Octavo of 266 pages with 38 illustrations. **Per clinic year July, 1933, to May, 1934.** Paper $12.00; Cloth, $16.00 net. Philadelphia and London. W. B. Saunders Company, 1934.

MEDICAL CLINICS OF NORTH AMERICA. (Issued serially, one number every other month.) Volume 17, **Number 1. (Cleveland Clinic Number, January, 1934.)** Octavo of 253 pages with 53 illustrations. Per clinic year July, 1933, to May, 1934. Paper, $12.00; Cloth, $16.00 net. Philadelphia and London: W. B. Saunders Company, 1934.

HUMAN EMBRYOLOGY AND MORPHOLOGY. Sir Arthur Keith, M.D., F.R.S., LL.D., D.Sc., F.R.C.S.; Master of the Buckston Browne Research Farm; formerly Conservator of the Museum and Hunterian Professor, Royal College of Surgeons of England. 5th ed., 535 ill., 558 pp. Baltimore, William Wood & Co., 1933, $10.00.

No other book in English interprets as well as this does the significance of human anatomy. The work is more than its title might suggest. It is not so much a descriptive embryology text as a guide to the plan of organization and development and evolutionary value of anatomical structure. Information on comparative anatomy, developmental anomalies and embryology is synthesized to produce a background against which medical school human anatomy should acquire a new importance. Both physicians and students will profit from its reading. The preceding (1923) English edition of Keith's work was a valuable addition to anatomical literature; the present expanded but compact work should, in view of its American publication, receive wide popularity in this country.

W. T. D.

MODERN CLINICAL SYPHILOLOGY. John H. Stokes, M.D., Duhring Professor of Dermatology and Syphilology, University of Pennsylvania; Member, Commission on Syphilis and Cognate Diseases, League of Nations Health Organization. Second Edition, Revised and Entirely Reset. 1,400 pages with 973 illustrations and text figures. Philadelphia and London: W. B. Saunders Company, 1934. Cloth, $12.00 net.

It is not too much to say that this is the largest single volume on any one disease and its manifestations that has appeared in the English language. Some one has said study syphilis and all else will be added unto you. This second edition is the result of three years' revision of the matter which appeared in the first. Every aid to diagnosis as well as methods of treatment are given, not to mention full treatment of the protean pathology of syphilis.

THE COLLECTED PAPERS OF THE MAYO CLINIC AND THE MAYO FOUNDATION: Volume XXV (Papers of 1933—Published 1934). Edited by Mrs. Maud H. Mellish-Wilson and Richard M. Hewitt, B.A., M.A., M.D. Octavo of 1,230 pages with 210 illustrations. Philadelphia and London. W. B. Saunders Company, 1934. Cloth, $11.50 net.

These collected papers of the Mayo Clinic cover almost every phase of medicine and surgery. They represent a valuable selection from the work of the Mayo staff of over two hundred workers. The table of contents resembles that of a work on Practice of Medicine. It is virtually a textbook on the practice of medicine and surgery newly written each year. Those who have procured former volumes will look forward to Volume XXV, which is the peer of the best of its predecessors.

ATLAS OF EXTERNAL DISEASES OF THE EYE. Humphrey Neame, F.R.C.S., Hon. Ophthalmic Surgeon Royal London Ophthalmic Hospital. Senior Hon. Ophthalmic Surgeon University College Hospital, London. 110 pages, 51 colored plates, price $5.00. Philadelphia. P. Blakiston's Son and Company, Inc., 1934.

This little work will be found of value to the general practitioner as well as to the ophthalmologist. There are many conditions noted that wisely he will not undertake to treat, yet that does not mean that an attempt should not be made to diagnose. The illustrations are as true to the appearance of the actual pathology as possible to make them. Each picture is accompanied by a brief description giving symptoms, diagnosis, pathology, prognosis and treatment.

RADIOGRAPHIC EXPLORATION OF THE MUCOSA OF THE GASTRO-INTESTINAL TRACT. The Cole Collaborators, including Lewis Gregory Cole, M.D., Robert E. Pound, M.D., William Gregory Cole, M.D., Russell R. Morse, M.D., Courtenay I. Headland, M.D., and Ames William Naslund, M.D. Price, cloth $7.50. Three-quarters Morocco $10.00. Pages, 336, over 250 illustrations. The Bruce Publishing Company, Saint Paul and Minneapolis, 1934.

"The object of this book," writes the senior collaborator in the preface, "is to describe and analyze the fundamental roentgenographic principles on which the diagnosis of various lesions must be based and to correlate the anatomic, pathologic and roentgenographic findings." The work does not deal with roentgenologic diagnosis of the various gastro-intestinal lesions as such. Its purpose is rather an exposition of the fundamental principles underlying roentgenologic diagnosis of conditions which may affect the alimentary tract. The standing of the personnel of authorship at once recommends the work to every roentgenologist wherever located. The work is also recommended to the surgeon or internist who would familiarize himself with the principles fundamental to roentgenologic diagnosis of lesions affecting the gastro-intestinal tract. The first chapter is devoted to methods of study of the gastro-intestinal mucosa, including a description of apparatus and technic. Then follows a splendidly

illustrated chapter presenting important anatomic data from the roentgenologic viewpoint. Two lengthy chapters deal with findings observed, in which chapters are described the lumen of the tract as seen in profile, the pliability of the mucosa to peristalsis, the pattern of the mucosal folds or rugæ, caliber of the lumen of the small intestine, the ileocecal valve, the physiologic function of the coats of the small intestine and correlation of anatomic and roentgenologic findings. The fifth and last chapter is an evaluation and correlation of the four fundamental findings observed in the exploration of the gastro-intestinal mucosa. The roentgenologist will read with especial interest the section which includes a translation of a study by Gösta Forssell (Sweden), known personally to a number of roentgenologists in this state, in which the senior author engages in controversial discussion. Probably in no other medical or surgical specialty is the matter of craftsmanship so important as in roentgenologic textbooks and journals. The reasons are obvious. The publisher of Radiologic Exploration of the Gastro-Intestinal Mucosa is deserving of the highest commendation in his masterpiece of the bookmaker's art. The work will prove invaluable to the roentgenologist and to others who value a basic study of the alimentary tract by means of the x-rays. The book is dedicated to the late Dr. P. M. Hickey of Detroit and Ann Arbor. The frontispiece is an excellent reproduction of a photograph of Dr. Hickey.

A PRACTICAL TREATISE ON DISEASES OF THE SKIN FOR THE USE OF STUDENTS AND PRACTITIONERS. Oliver S. Orensby, M.D., Clinical Professor and chairman of the Department of Dermatology, Rush Medical College of the University of Chicago; with revision of the Histopathology by Clark Wylie Finnereud. Fourth edition, thoroughly revised. Illustrated with 619 engravings and three color plates, 1288 pages. Lea and Febiger, Philadelphia, 1934.

Before describing the different skin diseases the author devotes over a hundred pages to the following subjects: Anatomy and Physiology, General Symptomatology, General Etiology, Pathology, Diagnosis, Prognosis and Treatment. A mastery of these introductory chapters will greatly facilitate comprehension of the thousand or more pages which follow, in which are discussed the numerous diseases peculiar to the skin. Thirty-six new skin diseases are included in this revision of this work. The author describes in detail such methods of general therapeutics as: Roentgen Rays, Grenz Rays and radium phototherapy, vaccine therapy and also the technic for treatment with liquid air and solidified carbon dioxide. The descriptions of the various dermatoses are concise and complete. The work cannot be too highly recommended for the general practitioner who meets in his practice the numerous skin diseases which in many instances are referred to the dermatologist. As a single volume text it will be found invaluable to the medical student.

OBSTETRIC MEDICINE. The Diagnosis and Management of the Commoner Diseases in Relation to Pregnancy. Edited by Fred L. Adair, M.A., M.D., F.A.C.S., Mary Campau Ryerson Professor of Obstetrics and Gynecology; Chairman, Dept. of Obstetrics and Gynecology, University of Chicago; Chief of Service, Chicago Lying-In Hospital; and Edward J. Stieglitz, M.S., M.D., F.A.C.P., Assistant Clinical Professor of Medicine, Rush Medical College of the University of Chicago; Assistant Attending Physician, Presbyterian Hospital; Attending Physician, Chicago Memorial Hospital; formerly Attending Internist to the Chicago Lying-In Hospital. Octavo 743 pages, illustrated. Published 1934. Cloth, $8.00 net. Lea and Febiger, Philadelphia, Pa.

What is obstetric medicine? The answer of course is general medicine as it concerns the pregnant woman. It will be noted that the editors of this volume, to which there are thirty-nine contributors, are an obstetrician and gynecologist, and an internist. The multiple authorship includes many of the most noted names in American medicine and obstetrics and gynecology. This work fills a need, inasmuch as we know of no other single volume which deals with the same subject. Works on obstetrics and works on internal medicine we have. The present volume, however, is in a sense a correlation of the two, with the exception that the technic of obstetrics is left for the special volumes on the subject.

MEDICINE A VOYAGE OF DISCOVERY. By Josef Löbel, M.D. Farrar & Rinehart, on Murray Hill, New York.

During the past decade or two several popular works on medicine have appeared of very high merit, in this country. Their titles are well known. "Medicine a Voyage of Discovery" is a German book along the same line. The present volume is a translation. Among the subjects dealt with in a very entertaining way are: Medicine, Anatomy, Physiology, Pathology including Cellular Pathology, Bacteriology, Serology, Surgery, Endocrinology, The Theory of Constitution, Psychoanalysis and Personality. The translation has been very carefully done into idiomatic English. The result is a volume that doctors will find of interest and one that can be recommended to the curiously intelligent patient.

CORRECTIVE PHYSICAL EDUCATION. By Josephine Langworthy Rathbone, M.A., Instructor in Physical Education, Teachers' College, Columbia University. Illustrated. W. B. Saunders Company. Philadelphia and London, 1934.

This book is intended for students of physical education and physical therapy. The contents are based on medical literature and therefore we take it are in conformity with the best medical teaching of the present day. We have here described exercises for the correction or compensation of physical defects, exercises that can for the most part be performed without medical apparatus.

MODERN DRUG ENCYCLOPEDIA AND THERAPEUTIC GUIDE. A presentation of 8,160 modern, non-pharmacopeal, medicinal preparations, comprising: 1,878 drugs and chemicals, 535 biologicals, 860 endocrines, 1,563 ampule medicaments, 209 medical foods, 129 mineral waters, 2,344 individual and group allergens and 642 miscellaneous products. Jacob Gutman, M.D., Phar.D., F.A.C.P. For the use of physicians, dentists, pharmacists and medical students. Paul B. Hoeber, Inc., New York. Price $7.50.

The title of this book fairly describes the scope of its contents. It is in every sense of the term a drug encyclopedia. It contains nearly 1,400 pages of reading matter well classified and indexed. In addition to the index of drugs, which is very full, there is also a very complete index of therapeutic indications. The book contains a vast amount of available information on the subject of drugs.

RECENT ADVANCES IN MEDICINE. Clinical Laboratory Therapeutic. G. E. Beaumont, M.A., D.M. (Oxon.). F.R.C.P., D.P.H., London, Physician, with charge of Out-Patients, Middlesex Hospital; Physician to the Hospital for Consumption and Diseases of the Chest, Brompton; Medical Tutor, Middlesex Medical School; sometime Radcliffe Traveling Fellow, University of Oxford; and E. C. Dodds, M.V.O., D.Sc., Ph.D., F.R.C.P., Courtauld Professor of Biochemistry in the University of London; Dir. of Courtauld Institute of Biochemistry, Middlesex Hospital; Pathologist to the Royal National Orthopedic Hospital; Goulstonian Lecturer, Royal College of Physicians. Seventh Edition. 58 illustrations. P. Blakiston's Son and Co., Philadelphia, Pa.

The series of "Recent Advances" by Blakiston are too well known to require any lengthy description. The monographs on the various subjects bring the subjects up to date whenever there is sufficient advancement to warrant recording it. The present little work of 480 pages is the seventh edition. Over 100 pages of fresh material has been incorporated since the last edition of three years ago. This work includes all the newer methods of clinical examination, which fact makes it a convenient handbook for everyone engaged in the practice of medicine.